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Inaug. of Pres. Draper

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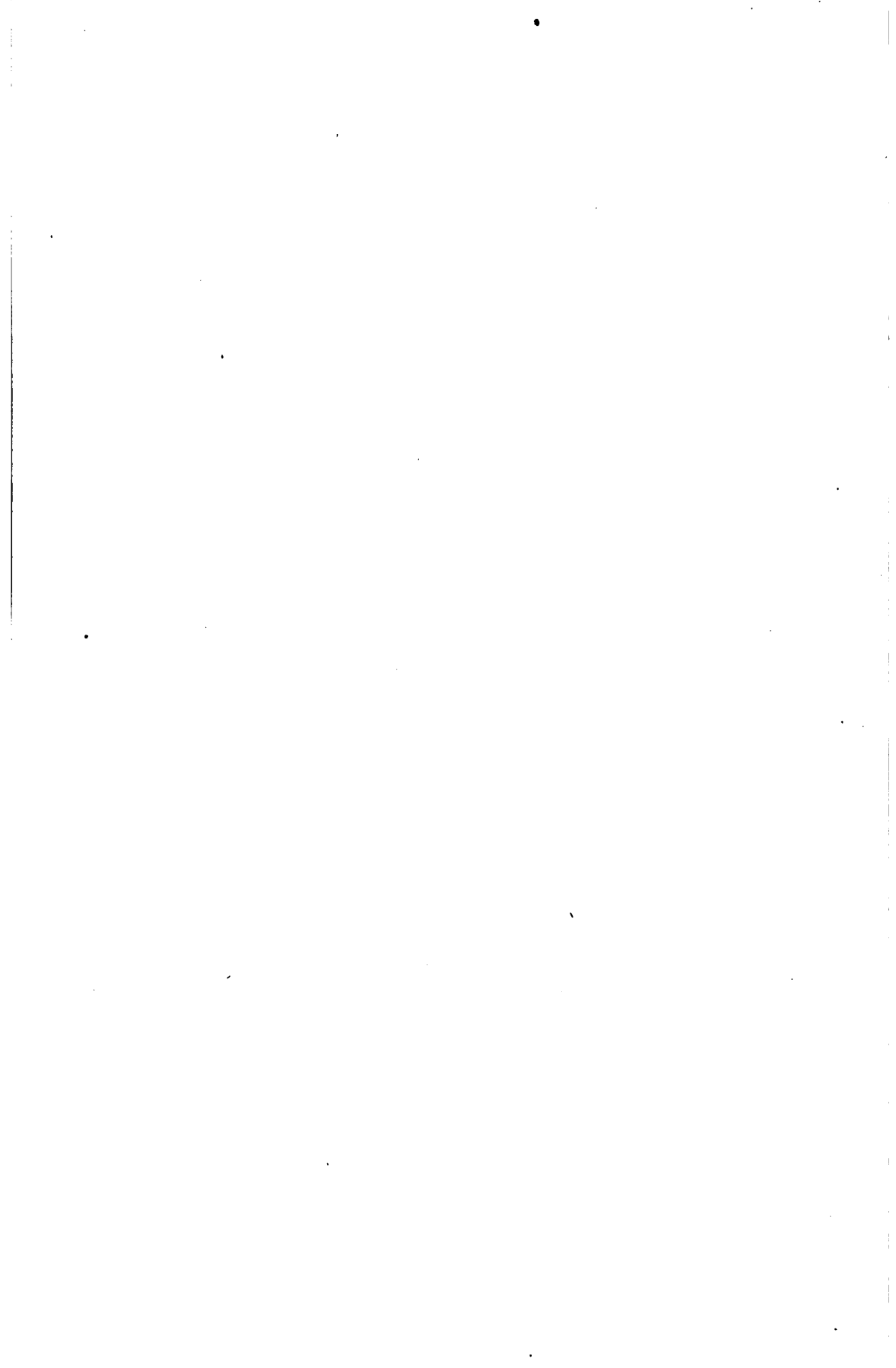
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UNIVERSITY OF ILLINOIS

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INAUGURATION

OF

PRESIDENT DRAPER

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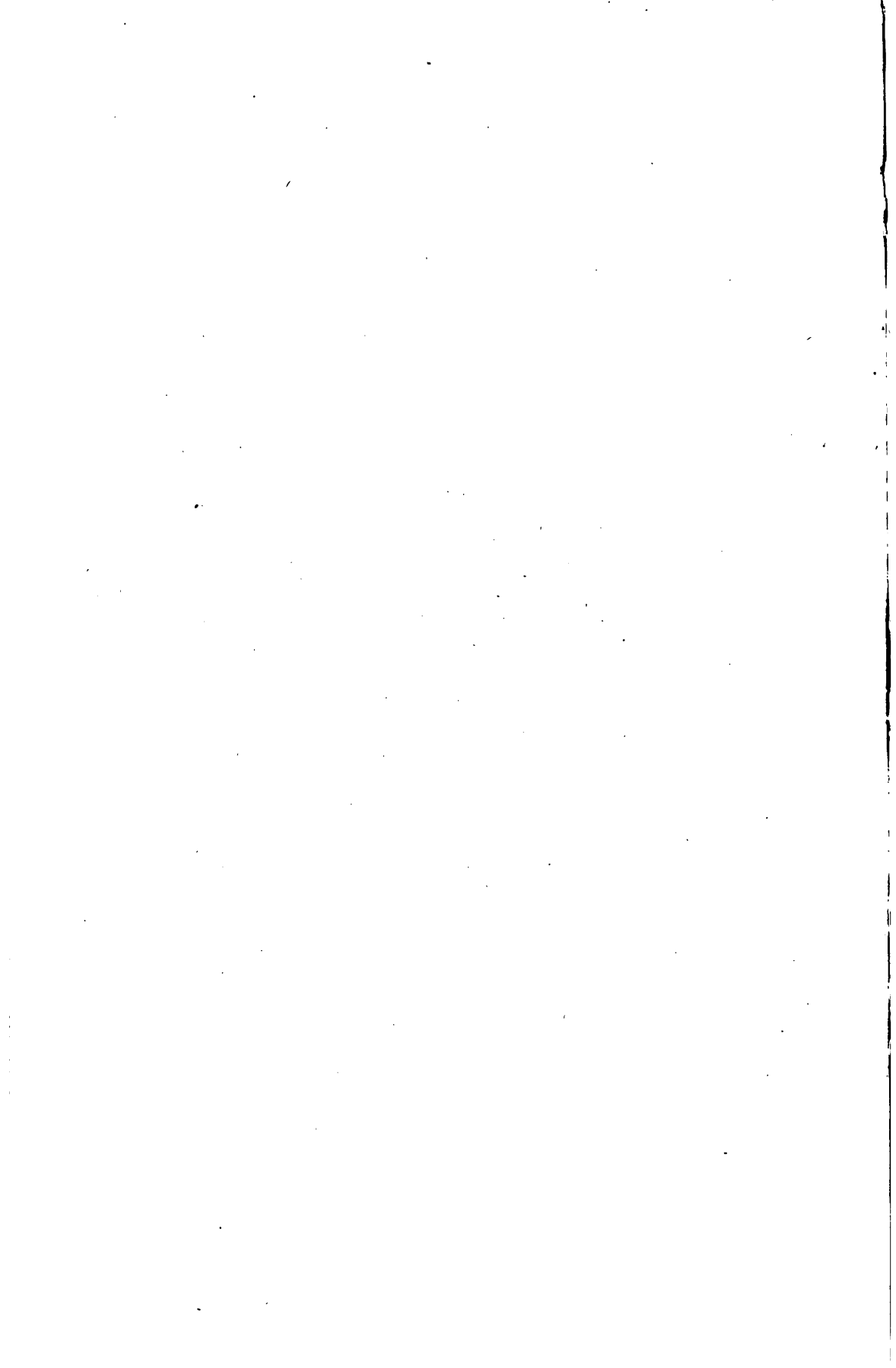
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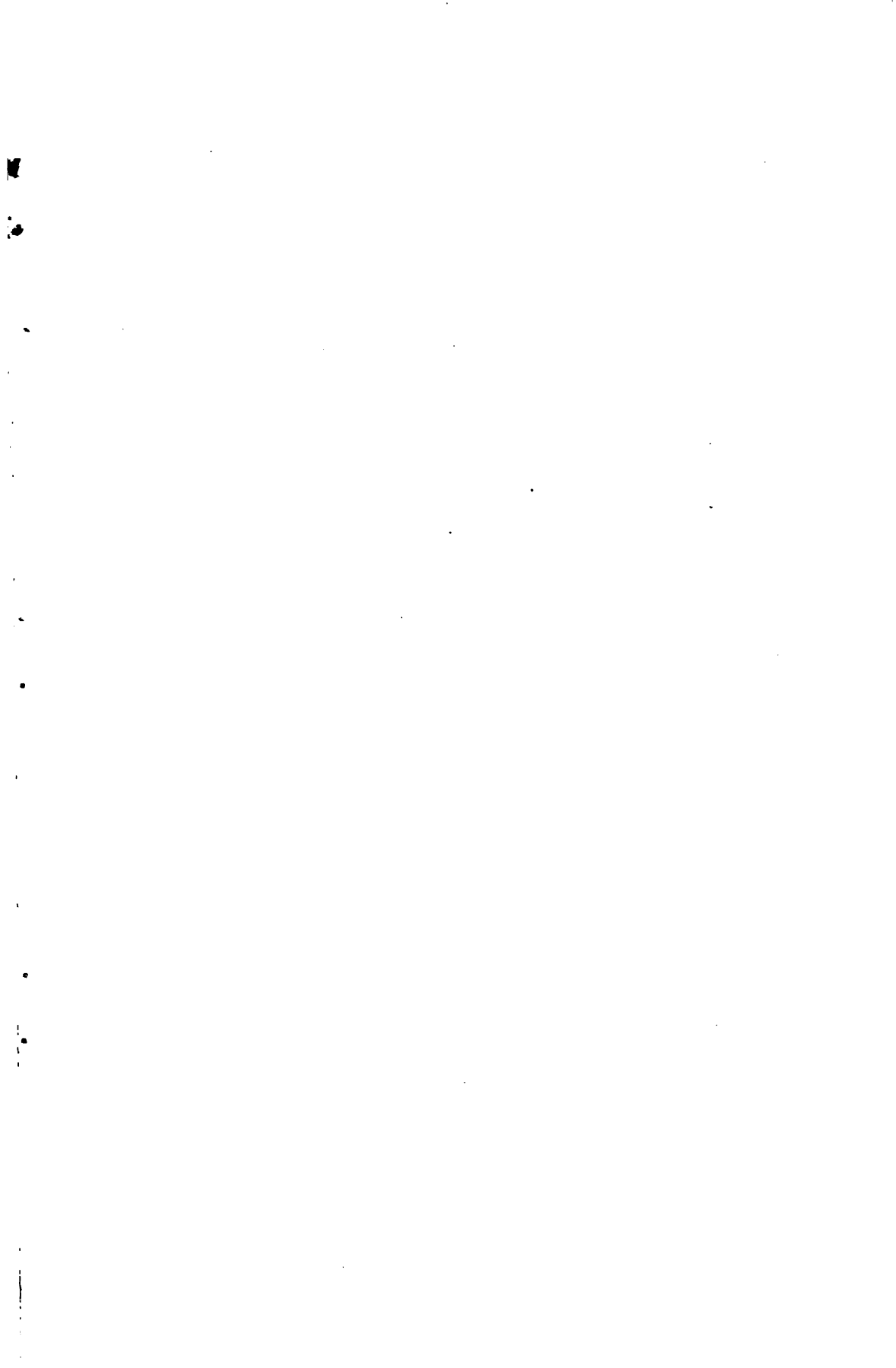
OF

ENGINEERING HALL

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NOVEMBER 15, 1894









Very sincerely Yours  
R. V. Drafen

PROCEEDINGS AND ADDRESSES

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AT THE INAUGURATION OF

Andrew Sloan Draper, LL.D.

AS

PRESIDENT OF THE UNIVERSITY OF ILLINOIS

AND AT THE DEDICATION  
OF

ENGINEERING HALL

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NOVEMBER 15, 1894

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URBANA, ILLINOIS  
PUBLISHED BY THE UNIVERSITY  
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# INAUGURATION

OF

## PRESIDENT DRAPER.

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By the resignation of Dr. Selim H. Peabody, the presidency of the University of Illinois became vacant September 1, 1891. Professor Thomas J. Burrill was chosen acting president. At the meeting of the board of trustees held March 13, 1894, the committee that had been appointed to recommend a suitable man to fill the vacancy was advised to send some of its members to confer with Andrew Sloan Draper, LL.D., at Cleveland, Ohio. At a special meeting of the board of trustees held at the Lexington Hotel in Chicago, April 15, 1894, this committee, of which Professor Burrill, Nelson W. Graham, and James E. Armstrong were the members, reported that it had visited Dr. Draper and recommended that he be elected president of the University. After consultation with Dr. Draper, who was present by invitation, the report of the committee was unanimously adopted, and the committee was instructed to notify him of his election. This duty was formally performed by the committee, accompanied by the other members of the board, at the Auditorium Hotel at 10 o'clock on the following morning.

By a letter addressed to Nelson W. Graham, chairman of the board of trustees, and dated May 10, 1894, Dr. Draper accepted the presidency of the University.

At the meeting of the board of trustees held September 25, 1894, November 15th was set as the day for the inauguration of President Draper, and a committee of arrangements was appointed consisting of Messrs. J. E. Armstrong and F. M. McKay of the board of trustees, together with

Dr. Burrill, Professor Ricker, Dr. Forbes, and Dr. Kinley, deans of the several faculties of the University.

It was decided to hold the exercises in Military Hall, beginning at 2 o'clock p. m.

By order of the committee of arrangements, at one o'clock p. m. all persons associated with the University and their invited friends, assembled at University Hall—the trustees in the president's rooms, invited guests in the library, the faculties of the University in the physical lecture room, the alumni in the zoölogical museum, and the students in the chapel.

Captain D. H. Brush, Seventeenth Infantry, U. S. A., Professor of Military Science and Tactics, was Chief Marshal, and the Military Battalion, led by the University Military Band, served as escort to the procession, which numbered some two thousand persons. The day was unusually mild for the season, and surpassingly bright. Military Hall was filled to overflowing.

The ceremonies were as follows:

#### PROGRAMME.

Music, "Abide With Me," (*Donnizetti*)—

UNIVERSITY ORCHESTRA.

Prayer,

REV. C. N. WILDER, D. D.

Music, "Profumi Orientali," (*Bellenghi*)—

UNIVERSITY MANDOLIN AND GUITAR CLUB.

Addresses:

For the Students,

PETER JUNKERSFELD, PRESIDENT SENIOR CLASS.

For the Alumni,

HON. CHARLES G. NEELY, CLASS OF '80, PRESIDENT  
ALUMNI ASSOCIATION.

For the Faculty,

PROFESSOR SAMUEL W. SHATTUCK.

Introduction of GOVERNOR ALTGELD as Presiding Officer by  
HON. NELSON W. GRAHAM, PRESIDENT BOARD OF TRUSTEES.

Address,

HON. JOHN P. ALTGELD, GOVERNOR OF THE STATE OF  
ILLINOIS.

Music, "Liberty Bell," (*Sousa*)—

UNIVERSITY MILITARY BAND.

Delivery of Certificate of Election, Charter, Keys, etc., to the  
President,

THOMAS J. BURRILL, LL.D., DEAN OF GENERAL FACULTY.

Inaugural Address,

PRESIDENT ANDREW SLOAN DRAPER, LL.D.

Music, "University Song,"—

UNIVERSITY GLEE CLUB.

(Words by Carnahan, '92. Music by Steele, '96.)

Music, "Crusader," (*Sousa*)—

UNIVERSITY MILITARY BAND.

The exercises were opened by the University Orchestra,  
which rendered "Abide With Me."

#### PRAYER, BY REV. C. N. WILDER, D. D.

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Almighty God, our Heavenly Father, we thank Thee for this day in our lives, and for the occasion which has brought us together. We devoutly recognize Thee as the author of our being, and as the giver of all the blessings which we enjoy. We thank Thee for the conditions of our life, and for the possibility of understanding these conditions and of so complying with them as to obtain the good which Thou hast designed for us. Especially to-day do we thank Thee for educational institutions and for educational opportunities; for the schools of all grades of our own commonwealth, and for the men and women constituting the corps of instructors in these schools. We thank Thee for our State University, for its establishment, its endowment, and its history. We recognize Thy goodness towards the people of the state in the

lives of the noble body of instructors who have been connected with it, and who to-day are devoted to its interests.

We earnestly ask Thy blessing upon all assembled, and upon all whose thoughts and whose hearts are with us at this hour. Command Thy blessing to rest upon Thy servant, the Governor of our state, giving him wisdom and grace for the duties of his high office; upon the board of trustees of the University; upon the faculty and students; upon all graduates of the University, and upon its patrons and friends, wherever they may be.

We ask, especially, that Thou wilt bless Thy servant who has been called to the presidency of the University, and who is to be inaugurated this day. We thank Thee for the success he has achieved in educational work in the past, and for the enthusiastic welcome that has been given him as he has come to this new position. We thank Thee for the large place he has already found in the confidence and affections of those with whom and for whom he is to labor. Graciously endue him with wisdom for the duties of the high office into which he is to be inducted this day, and may this University enjoy a career of great usefulness under his administration. May there go out from the University in the coming years a body of educated young men and women prepared for all the duties of American citizenship to which they may, in Thy providence, be called. Bless our beloved land through the lives of her educated sons and daughters.

We offer our prayer in the name of Jesus Christ, thy dear Son, and our Lord. *Amen.*

Music by the University Mandolin and Guitar Club,  
"Profumi Orientali,"

ADDRESS FOR THE STUDENTS,

BY

PETER JUNKERSFELD,

PRESIDENT OF THE SENIOR CLASS.

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*Mr. Chairman, Ladies, and Gentlemen:*

The inauguration of a new president is an eventful date in the history of a great university. The occasion is one of joy for all who are interested in its welfare. To-day we celebrate such an event at the University of Illinois.

In his love for the University and in the interest shown in its welfare the student yields to none.

Dr. Draper, it is my pleasure, on behalf of the students of the University, to welcome you to the presidency; to extend to you the most cordial and sincere greetings; to wish you success in the great work which you have just undertaken, and to express the hope that it may always prove in the highest sense pleasing and congenial to you; to assure you that this expression comes from every member of the student body, and that in every case it is given with feelings of great pleasure and gratification. Our acquaintance with you up to this time prompts us to extend an even heartier welcome and warmer greeting than we gave two months ago. Your genial personality, distinguished attainments, and high personal character have made a marked impression on all. With this knowledge and this acquaintance we give you our warmest welcome, our heartiest greeting, our most sincere expression of good will.



This large body of students will, after a few short months, bid adieu to the University, but will continue to watch with pride the successes of their alma mater. Many of us have lived for three years in expectation of this event. We have almost completed our college course. As indications of the growth of the University during our stay, we look upon the stately buildings that have been erected. We have seen the turning of the first sod, where Natural History Hall now stands, have watched the erection of that building step by step, until it shines forth as an architectural model and as a monument to the cause for which it was erected, the promotion of science. We have watched the erection of the splendid Engineering Hall, the dedication of which we are this day to witness. With feelings of pride we point to this building as a token of the progress and high standing of the work that will be carried on within its walls.

We have watched with deep interest the successful efforts of those in charge in securing the necessary appropriations, in order that our work might attain that high degree of excellence that alone determines the true worth of an institution of learning. We look with pride upon the advances made by the University, in equipment, in buildings, in the force of instructors, and in general prosperity.

While the work of a university depends largely upon its equipment, yet it must be recognized that the results effected depend greatly upon the character and aim of its students. Their success in the duties of life, the zeal and ambition with which they perform those duties, depend largely upon the spirit imbued while in college and upon the proper development of those faculties that make up true manhood and womanhood. No one factor has greater influence than the president. He shapes the policy of the university in its relations to the students, and largely influences their preparation for the graver duties of citizenship. His sphere of work is not confined to the immediate environment of the institu-

tion, but it affects the advancement and prosperity of the state.

To accomplish the most good for the University and the state, the actions of all should be in perfect harmony. All must work unitedly together and leave nothing undone that may advance common interests.

It is the most ardent wish of the students of this University that continued harmony shall prevail. We assure you, Mr. President-elect, that in all your undertakings for the welfare of the University, for the promotion of its interests and those of the state, you have our most hearty coöperation. With the many assurances that we have had, we feel confident that, under your guidance, our fair University will continue to prosper; that her fame, as is befitting the great state she represents, and the noble work in which she is engaged, will resound throughout the land.

## ADDRESS FOR THE ALUMNI

BY

HON. CHARLES G. NEELY, '80,  
PRESIDENT OF THE ALUMNI ASSOCIATION.

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*Mr. President-elect, Gentlemen of the Board of Trustees, Members of the Faculty, Students of the University, Ladies, and Gentlemen :*

The alumni, whom I have the honor to represent in the exercises of this hour, congratulate you, and the people of this great state that to-day the University we all love enters upon a new era in her history. This occasion is distinguished by the presence not only of the officials of the University, but by the presence of Governor Altgeld and many of the state officers.

In this splendid presence we are to inaugurate a president with fitting words and dignified ceremony.

We have already listened to the hearty greeting of the president of the senior class. Representing the alumni, you will permit me to speak with some degree of freedom and warmth in behalf of those—the alumni—who belong to other generations. Counting four years as the life of a student in college, the university has many generations back of her, and many generations in her presence to-day.

To-night the exercises of this hour will be completed by

the dedication of the new Engineering Hall, and a public reception to Dr. Draper.

One year from to-day, if Senator Dunlap, who sits at my right, will introduce a bill in the senate next winter, and the legislature will pass it, and the Governor will sign it, we will gather here again and dedicate the new library building.

The people of Illinois have been for months talking and writing about the University, and in the late election all the men and women of the state voted for trustees; therefore permit me to suggest to our distinguished guest, Governor Altgeld, that when he prepares his annual message to the General Assembly in January, 1895, he devote a paragraph to the University of Illinois.

I graduated with a very modest class, the class of 1880. I live in a very modest town, and I make these suggestions with very great modesty.

Mr. President-elect, Emerson has said that the writings of Beaumont and Fletcher were on so high a plane that the coming in of the merest incident at once elevated their prose to the dignity of poetic thought. The election of a woman to the board of trustees of our University will ennoble all the work of educating young men and women for the high duties of citizenship. We welcome Mrs. Flower, of Chicago, to the councils of the board.

Dr. Draper, the alumni pledge to you their cordial support, and in their behalf, and in the sweet name of several hundred children who belong to them, we give you this greeting. A large number of the alumni are not here to-day, but from happy homes, scattered all over Illinois, yes, from the broad republic itself, they give you the sympathy of their hearts.

This is a new era for the University. It is a new, glad day for her. It is a priceless opportunity for her to relate herself, by the presence of distinguished scholars, presidents of sister universities, and teachers from many cities, to the best thought in university work.

There are many lessons to be drawn for our advancement from this day's impressive ceremonies. The building in which we are assembled—the Military Hall—suggests discipline and drill; the Natural History Hall, a little farther on, suggesting the idea of growth and development; the new Engineering Hall, to be dedicated to-night, in an address by the scholar, Dr. Charles Kendall Adams, still more deeply suggestive in its very name, purpose, and plan, in life, and work, and thought.

A thousand memories come back to us of the alumni as we meet here to-day. The years have been rich in treasures. A great work has been done since we left these familiar scenes to enter the great struggle that begins every morning at sunrise. We believe a greater work will be done here, Dr. Draper, under your administration of the high office to which you are called to-day.

This is inauguration day. It means much. The inauguration of a president? Yes, and much more. It means the beginning of a new era in every department of the University. It means new men, new methods, new ideas, larger success, greater growth. It should mean that every child of this institution of learning, every official in any way connected with it, every friend far or near pledges himself anew with greater devotion to the interests and welfare of the University of Illinois.

There is a great opportunity for the citizens of Champaign and Urbana. A short distance west of this hall there is an imaginary line that divides these two beautiful cities. That line should be imaginary indeed. Let the citizens forget past rivalries and jealousies, and catch the spirit rather of emulation and progress. Make no public improvements on the streets or parks without remembering that a great institution is located among you. Erect no business house without recognizing that it faces these halls. Build no home unmindful that it is related to a great University. Beautify and

make still more attractive your cities. Make them worthy of the honor that has been done them by the people of Illinois. Make the setting worthy of the gem.

Dr. Draper, we all feel that a forward movement is made this day, and the alumni unite with all the friends of the University in welcome to you. We pledge our love and support, and we hail with pleasure your auspicious inauguration.

ADDRESS FOR THE FACULTY,  
BY  
PROFESSOR SAMUEL W. SHATTUCK.

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*Mr. President and Members of the Board of Trustees, Dr. Draper,  
Ladies, and Gentlemen:*

Twenty-six years ago, the faculty of this University of Illinois consisted of nine men, four of whom are at present connected with it, though only two of these are in active service. The University also had several non-resident professors, who gave courses of lectures each year. This corps of instructors had come from nearly as many different states and institutions of learning.

Dr. John M. Gregory was its official head and the leading and controlling mind. To him we owe the conception of making the new institution a grand university, one which should do all that was required by the federal grant and the state charter, to the last jot and tittle, and much more. I find in a circular issued in the summer of 1868 this statement:

“The hope of the trustees and faculty is that the institution will produce scholars of sound learning, but also of practical sense and skill, men abreast with their times, men of Christian culture, trained to affairs.”

This hope and these expressed aims of the University are indicated in its motto, cut in stone over the portal of its main building,

“LEARNING AND LABOR.”

The ideal was a grand one, not easily fulfilled.

I grant to the trustees the credit which is fairly due to them for a ready support, but I claim that the high position which the University holds to-day has been attained because of the high ideal and the conscientious work of its faculty.

Two things have often been remarked in regard to this body, the harmony among its members, and its hard work. I shall not forget how, in the early days of the University, the regent took a class in elementary mathematics, to help out the young professor who had charge of the three departments, mathematics, engineering, and military.

To the faculty belongs the credit of having given to women the right to appear as students in the University. This was done by the casting vote of Dr. Gregory, then president of the board of trustees, in March, 1870. Since then women have had an honored position in the University as students and teachers; and be it said to their credit, they have often held the highest rank in the University classes. The women who have been instructors have, as a rule, had high, scholarly attainments, gained at the best institutions at home and abroad. At present the corps of instructors in the University numbers seventy-eight persons, ten of whom are women. In view of what I have said, who can claim that women have not been fairly treated in this University. We welcome now the advent of a woman of culture and experience as a member of the board of trustees.

The faculty has had at its head, in these twenty-six years, three different men, Dr. J. M. Gregory, 1867 to 1880; Dr. S. H. Peabody, 1880 to 1891; Dr. T. J. Burrill, 1891 to 1894. Each of these men was an honor to the University, and at the end of the administration of each an advance had been made in the building up of a great institution.

To-day a fourth name, that of Dr. Andrew S. Draper, is added to the honored list. It is the consummation of the unanimously expressed desire of the faculty, made over two years ago.



Dr. Draper, President-elect of the University of Illinois, I, as the representative of its faculty, in the presence of the Governor of Illinois and of the board of trustees of the University, offer to you its allegiance.

We promise you our hearty support in your position.

Our prayer is, may God keep and direct you in your duties, and may you be able to do great things for this, our beloved University.

ADDRESS INTRODUCING GOVERNOR ALTGELD  
AS PRESIDENT OF THE DAY,

BY

HON. NELSON W. GRAHAM,  
PRESIDENT OF THE BOARD OF TRUSTEES.

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*Fellow Citizens of Illinois, Ladies, and Gentlemen:*

The reasons for this assemblage to-day are such as I hope will permit in behalf of its trustees a very brief and imperfect statement that will justify them in congratulating the people of the state on the present condition and prospects of the University of Illinois.

We boast of nothing, claiming only so to have used the liberal appropriations made to the University at the last two sessions of the legislature of the state, as to make easily recognized additions to its importance, its usefulness and its influence throughout the state.

The buildings erected are in sight and speak for themselves. The large additions made to the equipment in every department of the University are not so apparent, but a little investigation would show that they are hardly less important.

Means have been freely used to widen the scope of the prescribed courses of study, hoping to elevate and improve them all, but with special reference to the College of Literature and Arts, that it may be placed on the high plane already attained on the scientific and industrial side of the University.

Large necessary additions have been made to the teaching force, now numbering eighty professors and assistants, all of whom we venture to believe are as well qualified for the duties of their positions as we know them to be harmonious and enthusiastic in their discharge.

Closer affiliation with the schools of all grades supported by the state now has and will continue to have the careful attention of both faculty and trustees, assuring in good time a reciprocal influence of great value to the entire school system of the state.

It is hoped the interest in the University recently shown by the women of the state will not have exhausted itself in their successful attempt to secure a share in its management, but that it will continue and increase until they have secured large additions to the number of young women students, for whose instruction, safety, and comfort ample provision has been made, including the appointment of three young women to faculty positions, and twice that number to subordinate positions in the teaching force.

In the rules for the government of the University some modifications have been allowed, looking mainly to the larger personal liberty of the students, a corresponding personal responsibility being insisted upon, in the belief that young men and young women at the age of those in attendance here, constantly under the influence of the best examples, may be safely trusted to acquire habits of self control and self denial, both essential to the formation of the high character at which we must suppose they will, under such circumstances, all aim to a greater degree than can be expected of them when under the pressure of mere authority, no matter how rigidly applied.

That during an experience of more than three years not a case of discipline nor a question of government has been brought before the trustees, furnishes satisfactory evidence that in this direction at least no serious mistake has been made.

In none of these things have we hastened, or if at all, have hurried slowly, not rejecting the old because old, nor accepting the new because new; not fearing, however, to "give hospitality to new ideas," realizing in view of the vast, the illimitable unknown surrounding us demanding investigation and solution, that for an institution like this to stand still is to court decay and death.

We claim no immunity from error, but have the right to say that with no known prejudice, either personal, political, or sectarian, without fear and without favor, we have endeavored as rapidly as prudent use of the means allowed us would permit, to place the University of Illinois in a position fully abreast of the best similar institutions in near by sister states, and we think it may be freely conceded that some progress has been made in that direction. When this goal is reached there is not an industrial interest in the state that will not be promoted thereby, nor an acre of land in the state that will not have an added value. And these, the purely material results, will far more than compensate for all that has been done or that is likely to be demanded in the future for its support and extension.

But there are better results than these possible. It is not our teeming fields, nor the lowing herds on a thousand plains, nor our humming factories, nor whirring railroad trains, but its men and women that must make and preserve Illinois a great state, and what these men and women are to be will depend far less upon what they may have than upon what they may know; and this knowledge must come to them, directly or indirectly, largely through the schools of the state. Rare instances occur in which great eminence and distinction are achieved with little or no aid from the organized school. Horace Greeley, the greatest newspaper editor this country has produced, Abraham Lincoln, perhaps the greatest of our later politicians and statesmen, are examples, but such exceptions prove nothing. What

these men might have been with such advantages in their early life as are offered here, who knows?

Blondin crossed the Niagara River on a rope, but other people have found a bridge not only convenient but necessary for that purpose.

Now the intention here is to erect and maintain an educational bridge of the best attainable material and workmanship, practically free to the young men and young women of Illinois, and so attractive that when any of them shall feel the need of such a structure to carry them across the Niagara of life they will not think it necessary to look for it outside their own state.

Ladies and gentlemen, the board of trustees has thought it eminently fitting to select from their number one to preside to-day who has always given the University hearty, intelligent, and efficient support.

I take pleasure in presenting as the President of the day, Governor Altgeld.

## ADDRESS

BY

HON. JOHN P. ALTGELD,

GOVERNOR OF THE STATE OF ILLINOIS AND EX OFFICIO A  
MEMBER OF THE BOARD OF TRUSTEES.

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*Mr. President, Dr. Draper, Ladies, and Gentlemen:*

The growth of an educational institution is like that of a man, and cannot be accomplished in a day or in a year. There must be a period of infancy, of childhood, and of boyhood, before the vigor of manhood is reached. So with an institution of learning. There is the weak beginning, the early struggle, the later growth, and then the full-grown University; and as the ultimate greatness of the man is often in proportion to his early struggles, so the final career and usefulness of an institution is frequently determined by the difficulties it surmounts in its infancy.

A college or university is not simply a machine. It is not negative, but positive in character. It does more than teach algebra and Latin. It has an independent existence, and makes its impression on all who come in contact with it. Its character is a force that creeps silently over the land, and by day and by night molds the sentiment of men. It is this character by which an institution is judged. The world does not care so much for the number of students, but it asks, What is the character of the institution? What

does it stand for? Does it stand for a sturdy, stalwart, patriotic manhood, and the earnest, serious, hard work that goes with it? If yea, then great will be its influence. But if it represents only the easy-going standards of mediocrity or a dudish dilettanteism, then it will not shape the destinies of the nation. There have been colleges that were small and financially poor, but they gave to their country whole constellations of great men; while others that were both large and rich did little more than furnish amusement for inherited wealth.

The University of Illinois has passed through the stages of infancy and youth, and has arrived at a point where it should embark on a career of full grown and vigorous manhood. Much conscientious work has been done. The men who builded it toiled hard and laid the foundations broad and deep, and I believe that the structure which has been reared on these foundations is an enduring one; but we must broaden its influence and enlarge its work; we must bring it to the attention of our people. Few of them know of its great advantages. Few of them know that the Agricultural Experiment Station does not constitute all that there is, but is only incidental and gives so much of an additional advantage. Few of them know that the students, without extra expense and without loss of time, have the advantage of being trained in the military art by a United States military officer. And very few of them know that we have here one of the best equipped engineering schools, particularly in the department of electrical engineering, that there is in the whole country.

As the Executive of the State I feel a deep interest in all of its institutions, and I feel an especial interest in this University. The State of Illinois leads all others in point of material grandeur, in point of natural wealth. It leads all others in the energy and enterprise of its people, and it leads all others in having a romantic and wonderful history. Illinois already stands foremost among the great states of the earth. The achievements of its people have already won the

admiration of the civilized world, and we must have an educational institution that will be on the same plane of greatness and of the same high character. We have over this state numerous colleges and seminaries that are doing excellent work, and we should have here a University which could offer to the graduates of those institutions higher advantages. We should have here all the machinery, the instruments, the models, and the specimens that are necessary in modern education. I am anxious to have a university here to which our people can send their young men and their young women, instead of sending them East; a university that shall perpetuate the rugged strength and stalwart manhood which characterize the people of the Mississippi Valley. We want an institution which shall be free from the dilettanteism that is weakening the East, and that shall inculcate those fundamental principles of liberty, of national union and supremacy, and of local self-government that have given our country its marvelous career of progress and development. We want an institution that shall be thoroughly modern in spirit and effort, and from whose halls shall go forth men and women of such strong moral fiber, such industry, and such fervor of soul, that they will lead our people on to loftier planes and to greater glory. We must have in this state a university that will hold aloft the flame of American civilization so that all the people in the world may be blessed by its light. We must have a university whose fame shall be co-extensive with civilization.

I trust that this occasion may prove to be more than merely an entertainment, more than a passing event that leaves only a pleasant recollection. I trust that there may go forth from this meeting a spirit that will arouse all of our people, and that all of us who are in any way connected with this institution may have renewed inspiration and may go forth with higher and nobler resolves in our efforts to make this University represent the great common people of this country; make



it the friend and the helper of the toiling masses, of those people who do the work of the world, the people who lay the foundation of empires, who subdue rebellions, who fight for liberty, who build cities, railroads, churches, and schools, the people who make our civilization.

We have met to install a new chief. I have told you what we want to make of this institution. We needed a man to put in charge of this work who was more than a scholar, more than an educator, more even than a general; a man who, while possessing all of these qualifications, was also thoroughly imbued with the spirit of the age, with a sense of the needs of our people; a man who was not only progressive, but aggressive. We believe we have found that man.

Music by the University Military Band,—“Liberty Bell.”

GOVERNOR ALTGELD—I take pleasure in presenting to you Dr. Burrill, who for three years has faithfully discharged the duties of Regent, and who now transmits to Dr. Draper, President-elect, as his successor, the insignia of his office.

ADDRESS OF THOMAS J. BURRILL, LL.D.,  
DELIVERING TO THE PRESIDENT CERTIFICATE OF ELECTION,  
CHARTER, AND KEYS.

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*Mr. President, Ladies, and Gentlemen:*

I have been asked to present to Dr. Draper on this occasion some symbols of the authority with which he has been vested as president of the University. I suppose this pleasant duty has been assigned to me, rather than to some other, because such authority and responsibility has been temporarily, howbeit for a considerable length of time, lodged with me as Acting Regent. I have been supposed to have tasted the sweet morsel of presidential power, and to have rolled it complacently during some years under my appreciative tongue.

Whatever the facts in the case, and whatever the figurative flavor, I assure you good friends,—and I wish to say to Dr. Draper, possibly for his comfort in anticipations of the future,—whatever the aforesaid morsel may have been, whatever its chemical or gustatory properties, there is no bad taste left behind! If there is something more than mere fancy in the choice of ripe cheese and black coffee for the last course at dinner, I declare to you that I have not been obliged to resort to any clearing or obliterating or substituting process to get rid of the partaken, though not forbidden nor forgotten, sweets.

The fact is, crystalized sugar, the pure stuff kept pure, preserves its savor remarkably well; but wetted sufficiently and mixed with a little yeast, the saccharine matter soon becomes converted into fire water, which at the last biteth like a serpent and stingeth like an adder. While there is no sting like that of abused power, personal influence and sway, official authority and command, may be as honey distilled by flowers to the possessor and agent, and these may also be, like the nectar of flowers, richly perfumed with kindness and generosity to others and with self-forgotten forbearance and high-minded consideration for fellow workers in a common cause and in united effort for common good. For the president of a great institution of learning, who is dominated by an honest and lofty purpose to use whatever of authority and influence he may possess solely for the highest good of the vast interests he has in charge, there is little danger in regard to personal popularity and public appreciation. The position is full of labor and anxiety, but it also brings high honor to the deserving man, and the rich reward of preëminent usefulness to the world of humanity striving for the highest and best things in life.

I make no apology to-day for expressing my own personal and official solicitude for the University of Illinois. This has become a strongly rooted habit during the associations of a quarter of a century—a habit from which I have not cared, and do not care, to free myself. I witnessed the ceremonies inaugurating the first president or regent and participated therein, somewhat effectively, too, for I sat down to the banquet table furnished by the ladies of the community on the memorable 11th day of March, 1868. I honestly tried to do my part well upon that occasion, and honestly believe the effort was successful. Ever since that time I have been trying to keep the record good, though it must be admitted that many other things have been far more common than banquet tables.

I have had from the beginning great faith in the University of Illinois, partly because I knew of and believed in its foundations; also because I have long known of and thoroughly believed in the great commonwealth to which it belongs and for which it exists. This faith in the institution is stronger and brighter to-day than ever before because of the man whom we this day inaugurate president. The supreme pleasure I now have in the simple part assigned me is highly intensified through my earnest interest in the University and by the strongest possible conviction that our act to-day marks the beginning of great things for the institution through the efforts of the new president.

O, Illinois, queen among the states of the Union, thou shalt wear upon thy broad and beautiful brow the choicest diadem of which imperial greatness can boast—a crown of light and life, the University which bears thy name!

President Draper, be good enough to accept through my hands and with heartfelt good wishes for yourself personally in the arduous task you undertake, and with the highest hopes for the greater University soon to exist under your skillful guidance, these tokens of the trust now committed to your charge, and for the authority of your commands.

This document, already yellow with age, though dated 1868, signed by Andrew Johnson, as President of the United States, a patent to lands for the endowment of the University by the government of the United States, may typify the charter of the institution and the title to its possessions. This charter and these possessions are with great confidence and high hopefulness entrusted to your keeping and supervision. There are more than ten talents; more than ten talents are to be added thereunto.

This newer paper, fresh from the engrosser's hands, contains the special matters relating to your election as President. Its earliest date is March 13, 1894, and its latest

one April 13th of the same year, the last date being the one upon which you were elected to your high position. May it be long before that other date, which must inevitably be sometime added, is written by the stern hand of Fate!

These keys give you actual freedom to the buildings of the entire University. No nook or corner is to be hidden from your inspection, and no obstacle is to thwart your fullest investigation. But these keys are magic keys. They unlock human hearts as well as oaken doors. Walk in and take possession with the freedom which all join me this day in extending to you.

“ Ah, how skillful grows the hand  
That obeyeth Love's command;  
It is the heart and not the brain,  
That to the highest doth attain;  
And he who followeth Love's behest  
Far excelleth all the rest.”

So says the poet; but better than either heart or brain is the heart *and* the brain dedicated to-day to the service of the University of Illinois.

GOVERNOR ALTGELD—The President-elect, Dr. Andrew Sloan Draper, will now deliver the inaugural address.

## INAUGURAL ADDRESS

BY

PRESIDENT ANDREW SLOAN DRAPER, LL.D.

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*Governor Altgeld, Gentlemen of the Board of Trustees, and Ladies, and Gentlemen:*

It is said that there is a part of the Isthmus of Darien where the neck of land is so narrow that at times the attentive listener can catch the roar of either ocean. At such a point the inclination to hear the one and then the other would be irresistible. We too are upon narrow ground this afternoon. The act of the University trustees which is proclaimed by formal ceremonial at this hour, and which is consummated by the delivery to me of emblems of authority in the midst of so proud an assemblage, is surely a consequential act in the history of the University. Whether wise or unwise, it is for time to reveal. But the important relation it sustains to the good cause of liberal learning in Illinois, and therefore to the great state itself, will not be doubted. Such acts have occurred but twice before in the twenty-seven years' life of the University. They mark epochs in the career of an institution, and fix dates of as much relative prominence in its history as those which have been established in the course of empire by the accession of the kings. On such an occasion the impulse to turn in two directions, to recall the voices of the past and listen for the whispers of the future, is also irresistible.

### ACKNOWLEDGMENTS.

Others, who have been a part of the past and who are to be a part of the future, have already spoken. They have expressed their just pride in what has been, their pleasure in

what is, and their confidence in what is to be. For what they have said that relates to me personally I must first make my most grateful acknowledgments. For as much as relates to the future of the University, I give my most sincere thanks.

To the students, for the kindly and considerate support which has given me some degree of confidence, for the respectful and cordial bearing which has made my walks among them a continual pleasure, as well as for the good words of their representative to-day, I give the assurance of my appreciation, and add the pledge that I will at least try to remain young enough in my feelings to keep in touch and sympathy with them, while together we endeavor to reach forward and upward to the things which will give us strength and pleasure as well as usefulness and influence in the affairs of the world. I will never forget what they may do, what they *must* do, to make the undertakings of the University effectual, nor doubt that the strong common sense and the overwhelming purpose of the student body will be manifested at all vital points to enlarge its operations and extend its work.

The strength of a great educational institution, its standing and power for good among the people, depend more largely than we are accustomed to remember upon the love and loyalty of its graduates. Our students are already coming to occupy positions of influence, even to be known in great enterprises, in all parts of the land. The pledge of their unceasing affection is grateful to all of us. Their numbers will multiply and their influence will extend. May their love, and thoughtfulness, and alertness for the University grow with their accumulating honors and their power to help her. It has not yet been my good fortune to meet the alumni, but their early greetings gave me pleasure I shall not soon forget, and now the eloquent words of their speaker thrill my heart. May the time never come when those who have the right to speak of "the days of yore" will not be drawn hither by the tenderest ties of the human heart, to

renew their youth and repeat the gladsome story of the by-gone years, as well as to give cheer and encouragement to those who come after them.

The words of the faculty are particularly grateful to me, and, moreover, they are only the expression of courtesy and generosity which have been manifested in such large measure and in so many directions that I well know there is no room for doubt as to their truthfulness and sincerity. They tell us that from the time when it became necessary to consider the subject at all, for nearly three years,—long before the advisability of the step could be discerned by me, the faculty urged the union which is now effected. I have wondered more than once if they realized the hazard that was involved. I can only say that I will do what in me lies to save them from humiliation and to show that they did not blunder.

It is no wonder their honored representative refers to the past. It has been a severe struggle, and they have waged it with courage; it is an honorable record which has been made, and they have had large share in making it. Trustees and students come and go, but instructors are here continuously, and some of them have been here from the beginning. The University becomes their home. Their heart-life, their mind-life, give it the character it has and the power it exerts. Surely they have the right to be jealous of the past. They would be unworthy if they were not. But they need not be solicitous: the past is secure. If there is any doubt, it relates to the future. No matter what expansion and development may wait upon endeavor, no matter what new fields of usefulness may be entered by the University, or what new laurels may crown her brow, the time will never come when all the world will not remember that the men to whom the institution owes the most are those who laid its foundations in truth and gave strength and character to its first years. There are few nobler heroisms on earth than those which transpire in the early life of great educational undertakings, and of



these none have been nobler than those which were exemplified upon the ground where we are now assembled. And no matter what other names may be added to the honor-roll of men and women who have given tone to the character and trend to the inner life of the University of Illinois, the time will never come when the names of Gregory, and Burrill, and Shattuck, and Snyder, and Robinson, and Morrow, and Peabody, and Ricker, and Forbes, and Baker will not lead all the rest. A score of others have established themselves in places of honor next to these, and still half a hundred more give promise that they will help mould the life of the University to its advantage. I would indeed be blind if I failed to see how much is involved when such a body, under such circumstances, opens its circle to a stranger and gives him welcome and confidence, and I would be ungrateful indeed if I did not requite their consideration with unflinching courtesy and render them unflinching honor.

The Board of Trustees, through its worthy and venerable president, speaks on behalf of the state, and the state speaks directly through its chief executive officer. I desire to consider the relations of the University to the state a little in detail. But first I am glad of the opportunity to express my thanks to the board for conferring upon me so great a mark of confidence, as well as for the agreeable personal relations the individual members have already established with me. And I thank Governor Altgeld for his presence to-day, at much inconvenience and at the expense of other engagements; for his words of commendation and congratulation; and above all for the unflinching thoughtfulness and wisdom with which he continually exercises the powers of his great office for enlarging the equipment and intensifying the energy of the University.

#### ACCEPTANCE OF AUTHORITY.

I accept the emblems of my responsibility and authority from the trustees of the University and the officers of the

state. They are delivered to me by the hand of one who has been a tower of strength in the institution from its very beginning, who has seen all its structures erected, whose hand has set all the beautiful trees upon its magnificent campus and upon its broad acres, whose pure life and disciplined mind have shaped and guided its work, and whose scientific repute is not bounded by state lines or hedged in by either ocean. In such a presence and in such a manner, they come to me with peculiar significance and impressiveness. I will never regard them lightly. Before these witnesses, I thoughtfully and willingly give the pledge that I will be loyal to the trust and that I will do what in me lies to enlarge and enrich the work of the State University, that it may do more to benefit the people who support it and aggrandize the state for which it stands.

#### THE FUTURE.

It is easier to recall what has been than to forecast what is to be. As fascinating and as profitable as is the story of yesterday, it is at once a pleasure and a duty to contemplate the morrow. We are not obliged to view it from a trough of the sea but from the crest of a wave. The University has enjoyed unusual prosperity during these last two or three years which have been unwound from the great reel of time. The trustees have seen the necessities of the case clearly, and they have been vigorous and courageous. The legislature has been responsive. The Governor has been sympathetic and decisive. New buildings have arisen upon the campus. The courses of instruction have been broadened and extended. The faculty has been enlarged and strengthened. The students have multiplied. It seems fair sailing before us. The weather is propitious. There is plenty of ozone in the University atmosphere. The feeling is buoyant; the appetite is sharp. We hope to crowd on more steam and put out more canvas. And under the starry flag of the Republic, under

the guidon of Illinois, with innumerable streamers of "orange and navy blue" we expect to show as staunch and serviceable a vessel as sails the educational sea.

But now let us put fancy aside. Let us eliminate any possible elements of uncertainty. Let us see where we are, and whither we are going. Let us take our bearings. Let us inspect the engines. Let us go down into the cabin and look up our charts.

#### PURPOSE AND POWERS.

An institution set up by the authority of the people and supported by their means is bound to regard the influences which produced it, the limitations which surround it, the spirit which gives it life, and the purpose for which it lives.

A university is to live, and feel, and act. It is not a mere collection of grounds and buildings and museums. It is a living organism with an emotional nature to inspire it and an intellectual life to direct it. It is to act under powers which have been conferred upon it, it is to take the place it is authorized to take, it is to be guided by the world's experience, and it is to be governed by the circumstances and animated by the interests of the people who have breathed into it the breath of life.

#### THE UNIVERSITY THE OUTGROWTH OF A CRISIS.

This University was the outgrowth of a crisis which had menaced the affairs of the nation from its birth. It was reared upon the foundation of the great National Land Grant Act. The civil war did not produce, but it gave life to that enactment. It had failed at the hands of a previous administration. It needed the hard, extreme circumstances of bloody war to make clear the necessity of such a great beneficent measure. It has peculiar interest to us, for it was the greatest of the presidents, the towering son of Illinois, whose familiar footsteps were wont to hallow the ground upon which we meet to day, whose approval gave it force and effect.

## AIM OF THE LAND GRANT ACT.

This Act had a distinguishing end in view. It was the plain intent of Congress to give aid which would create colleges and universities in the different states, whose purpose should not be intellectual and literary alone, but distinctively practical and industrial. It was clearly said that scientific and classical studies should not be excluded, but there is no room for doubt of the intent to make assurance doubly sure that agriculture and the mechanic arts and military science should have full consideration. The end in view was to found colleges for the masses whose work should count in developing and dignifying the manual employments of the people. This was a great patriotic end. But another patriotic end was to be attained. Great armies were in the field for the preservation of the union of the states. The necessity for more young men trained in the science of war was oppressing the nation. It was here measurably provided for. So much secured, other things were to be encouraged according as circumstances should develop. That there might be no uncertainty about it, this all appears upon the face of the congressional enactment.

## ITS PURPOSES HAVE BEEN CARRIED OUT.

Organizing under this act, the University was bound to enter into the spirit of it. Taking the avails of this grant, it was bound to carry out the main purposes of it. It has done both, and it will continue to do both. The abundant and prolific work of the College of Agriculture has uplifted the agricultural work and measurably directed the agricultural operations of what has come to be the foremost agricultural state in the Union. Its scientific researches have helped on the good cause of intelligent and scientific agriculture everywhere. It can do still more. The College of Engineering has an equipment and record with but three or four rivals in the country, and in some respects without any at all. We

shall to-night dedicate to its uses the best building upon the campus, erected, as it must have been, by the munificence of the state and not by the avails of the national act. These facts, taken in connection with the military battalion which escorted us to this place, with all the equipment of war and all the martial bearing of veteran soldiery, are abundant proof that the purpose of the state and the plan of the University have been in touch and accord with the spirit and aim of the act of congress. More than this: The purpose of the act was wise, and it has been carried out with genuine approval, for there was no part of the country where that purpose was more in touch with the circumstances and purposes of the people than in Illinois.

#### PROGRESS OF A GENERATION.

But everywhere in the land circumstances have been modified, in the intervening generation. It has been strikingly so here. The multiplication of the people has been phenomenal. The industrial development has been unprecedented. Knowledge has accumulated to an unexpected degree on the industrial and commercial side of life. Enterprise has intensified. It will be still more so. The people are not poor and helpless; they are rich and strong. Your farm lands, the richest in the world, have advanced from \$10 or \$20 to \$60 or \$80 per acre. They have scarcely to be touched to yield great harvests. Your coal beds are inexhaustible. Innumerable industries call loudly for men skilled in mechanics, for managers and directors, and give remunerative employment. Great public works call for engineers of all classes. The hands are not going back on the dial in Illinois. No one would have the courage to undertake to set the limits which will be reached in the ensuing generation. The necessity for training in scientific agriculture and in the mechanic arts was never greater than now. Those fields were never so inviting as now. But other necessities have arisen. Other lines of

educational effort need to be emphasized also. If the same minds which made the act of '62 were to make one now, it would not appear in just the same words. The progress of the generation would of course be recognized. There is a law higher than the naked words of a written statute. Moreover, the state has now become an important factor, indeed the all important factor in the problem. It has put its authority behind the work; it has put the money of its people into the undertaking. It has great purposes of its own to subserve; it is bound to accomplish what it undertakes. In a word, the University is not only bound to keep faith with the congressional enactment, but it is to do infinitely more.

Education is the *equable* evolution of the human powers. The man who knows much about corn, but little about books, is poorly educated. The woman who knows much about the fine arts of music and painting, and nothing about the fine arts of cutting gowns and making bread, is poorly educated. The man who knows much about the world's early history, or is entirely familiar with Greek roots, but does not know on which side of a motor car it is best to get off, when cars run on parallel lines and in opposite directions, or the man who takes no part in the affairs of the town in which he lives, is but poorly educated. Sound education is what enables people to be useful to themselves, stimulating to others, helpful to the circumstances surrounding them. Specialization is the order of the age, and it is well; but the harmonies are to be preserved. So it is in the lives of individuals. So it is in the lives of states. The sound education of the people of a commonwealth lies in their harmonious development up to the highest, broadest possibilities. Their minds, their hearts, their bodies, their homes, their vocations, their interests, their tendencies, their institutions, their children and their children's children, are all involved.

## DIFFERENT EDUCATIONAL FORCES AND INFLUENCES.

The age is intensely industrial, commercial, and practical. An education which does not glory in this fact and promote it is a weak and poor education. The people will not, and they ought not, accept a system of education which lives only in the past, which dreams and speculates, and involves and mystifies. They will have a system of education which can stem the deep and swelling current of our modern life, and which applies to matters in which they are interested. But an education which is wholly intent upon money is also a very one-sided education, and the people will not, as they ought not, accept that either.

There are some educational operations and influences which act directly and quickly upon life and vocation. They are apparent upon the surface of things and produce money quickly. There are others which are more obscure, which act indirectly and with less energy. Yet they may produce results which, in the long run, count more heavily in the affairs of life. In time they may even produce more money, and are more than likely to produce that which cannot be valued in money. They cultivate the taste, they train the judgment, they germinate thought, they control the passions and stimulate the ambitions. We cannot do without any of them.

There are sciences which act quickly and sharply upon the activities of life. But the whole of God's truth is not to be revealed in a day, and therefore there are sciences which are more occult and reach conclusions more slowly. There are sciences of sciences, which ascertain facts that will only be available in coming years, or, possibly, only to some seeker for the truth in another generation; yet the end which they do gain in the slow process of time may be a higher end, and it may have more weight in unfolding the truth of the Almighty and working out the harmonious evolution of the masses than others which seem more apparent to us. In a

word, there are educational forces which go directly to the making of money and indirectly to the making of men. And there are other educational forces which go more directly to the training of men, and indirectly to the making of money. We need them all. These forces are to be cultivated harmoniously. The departments which are the weakest must be given the most help, to the end that all of these forces may be cultivated harmoniously and university ideals be measurably attained.

Illinois has great, rich farms to cultivate, and it is important that they be cultivated advantageously. She has horses, and cattle and swine to feed, and it is a great service to her people to show how to do it so as to produce the most profit. She has vast structures to erect, and it is a great service to the state to teach young men and women how to erect them out of the materials at hand, so that they will be safe, pleasing to the sight, and suited to their uses. She has great public highways, and water systems, and sewage systems, and electrical plants, and no end of machinery to construct. When she teaches her sons and daughters to do these things she is not only preparing them for honorable and profitable vocations, but for vocations which are imperative to the health, pleasure and intellectual, industrial, and moral development of her people.

#### INDUSTRIAL PROGRESS PRODUCES INTELLECTUAL GROWTH.

But that is not all. When she is doing that she is developing the young men and women themselves. And, even more. When the farmer improves his farm and his methods, his implements and his stock, the farmer improves himself and those dependent upon him. When the mechanic acts upon the basis of pure mechanics and along scientific lines, and is something more than a mere copyist, his work grows in effectiveness, and he himself grows in versatility and power. When we train teachers and leaders in industrial pursuits we



train men and women of intellectual force, and we are promoting many interests and attaining great ends for which states and state universities exist.

#### OTHER THAN COMMERCIAL ENDS TO BE PROMOTED.

But there are other great interests to be promoted and other great ends for which states exist. If it is important to feed domestic animals to advantage, it is certainly of no less moment to feed human beings well. If it is important to till lands scientifically, it is of no less consequence to till human minds scientifically. If it is imperative to study theories of construction, and the strength of materials, and the operations of machinery, and the principles of motion, it is certainly imperative also to study the laws of nature and the processes of life. And states exist for the promotion of these ends also.

#### POLITICAL AND SCIENTIFIC QUESTIONS.

But even these are not all the subjects which crowd upon an intelligent people. There is unrest in the land. The relations of the people to each other in organized society, the relative authority of the Federal Government, and of the states and municipalities, the chartered powers of organizations which operate by sufferance of the state and are of great consequence to its people, the adequate and proper punishment of crime, the wisest management of the unfortunate classes, the purity of elections, the faithful administration of the laws, and many other questions which go to the form and acts of government itself, are all under discussion. Interests are conflicting, and there is much obscurity, much confusion, and great uncertainty about them all. We are in an overgrown national childhood. But we are going on to maturity, and all these questions are to be settled. They are to be settled on a basis which will endure. There will be uncertainty until they are settled in a way which assures the rights

of all, and guarantees the fullest liberty and the most help to every individual not inconsistent with the highest good of the entire body. They will not be settled among a self-governing people except in the light of bitter experience and through the superior intelligence and the quickened conscience of the multitude. They will have to be settled by legislation. But that legislation will never be prepared by men who are merely searching for dividends. It will never be enacted by men who are only talking and looking for votes. They will not be settled until the men and women who are to settle them are educated to the task in the schools, and the schools will be unequal to the undertaking unless they are ordained by all the people, are independent of obstructing influences, and are at least able to do as effectual engineering in the worlds of thought and of ethics as in the world of matter.

#### PROFESSIONAL DEPARTMENTS.

From the time when the light of the star of Bethlehem penetrated the darkness and superstition of Europe, fired the hearts and liberated the thought of the people, started the nations in motion, lighted the fires of revolution, and then set up the schools, the universities have been founded on three great bodies of learning, namely: theology, medicine, and law. Down through the ages these three learned and honorable professions have been the bone and sinew, the flesh and blood of the universities, the most potent agencies in giving freshness and virility to the world's thought. Our nineteenth century life has added other honorable professions to this great triumvirate. The end is not yet. But no matter what his point of vision, no matter what has been his training, no matter how much he may be involved in the world's commercial life and industrial undertakings, no man can safely say that these learned and powerful professions which first made, and have always shaped and strengthened the universities, will not continue to be mighty powers in shaping their organi-

zation, and directing and energizing their work if they are to continue, as they are, to stir, to originate, to vitalize, to train and elevate the world's opinions.

And that is the end for which universities exist. That is the gist and essence of all they do. All the learned professions, the old and the new, must cooperate; classical and literary culture and scientific investigation and industrial training and mechanical skill must all be coordinated in university work if the mighty ends for which states exist are to be secured. When the schools cease to keep in advance of the evolution of the people, evil will predominate, the public security will be menaced, and social disintegration will ensue.

#### EDUCATION OF WOMEN.

Long before the subject had attracted as much attention as now, in its very first years, this University opened its doors to woman and offered her the same facilities that were offered to man. But woman does not commonly seek the same university work as man. Her tastes are more for literature and the arts than the sciences and the mechanical industries. To have equal advantages she must have advantages which are as much to her liking. Then, the average woman has not had the same facilities as the average man in the work of the State University. This is abundant explanation of the fact that our women students number but twenty per cent. of the entire body. The proportion should be materially increased. It will be well for the internal affairs, the tone and spirit of the University, to have their numbers enlarged and their influence increased. It will be well for the homes and the culture of the state as well. The numbers will be increased by increasing the facilities which they specially seek. It will be at once an act of justice and an act of wise policy as well.

## ALL FORCES TO BE UTILIZED.

My thought has been entirely misapprehended if I have aroused any suspicion that I would have had the slender means heretofore available to the University used in any other way than they have been. It was a great task to build up a strong engineering college here. It is a lasting honor to the men who have done it. It never could have been done except through the use of the larger share of the resources. But it has been done. Nothing succeeds like success. It will go on to prouder triumphs. My contention is not that we have done too much, or are likely to do more than we ought in any one direction; not that we shall do less in any direction, but that we must increase our facilities and do more in all directions. We stand to-day up above all class interests. We are looking for the forces which will nourish even more industry, which will stimulate even more enterprise, which will make still better houses and still happier homes, which will do yet more to vitalize thought, to generate culture, and grow moral fibre among all the four million inhabitants of a commonwealth which is 380 miles north and south and 205 miles east and west, with 56,000 square miles of territory and 36,000,000 of as rich acres as there are on earth, which is among the very first of the great states in wealth and energy and earning power, which has within its borders the city of most wonderful growth and most marvelous energy the world ever saw, which is able to do well whatever it is well to do, and is bound to accomplish completely whatever it undertakes.

If there is one class of educational forces which bears directly upon the commercial, the utilitarian, the economic side of the world's life, and if there is another class of educational forces which bears directly on culture, originality, and mind-power, there is no necessity for the state of Illinois to discriminate between them. If there is a dilemma, it is for us, with true Illinois energy and courage, to take both horns

of it. She can make one of the foremost industrial and technological universities in the land, if she has not done so already. She can make a center of literary culture and professional thought which shall ripen and enrich the lives of all her people as well.

Because she can, she must. She must organize her State University so that it will satisfy the highest educational needs of her great, busy, swelling population; so that it can meet the circumstances and the widely differing tastes of every son and daughter of her people. She must keep it in touch and accord with the high schools of the state. She must hold students as long as she can and give them all and whatever they will take that will conserve the purpose for which states are ordained, and justify the end for which universities are founded. Thereby will she gain added influence in the sisterhood of states and do more to overthrow the enemies of her peace than police organization or military power can ever hope to do.

#### WORK AND INFLUENCE ABROAD.

I have endeavored to point out rather than discuss the policy which the state ought to pursue through the State University as a localized institution. But the State University may well be very much more than a collection of buildings and a gathering of instructors at one place. It may well reach out, exert an influence everywhere, and accomplish things at arm's length.

It can fix and enforce the minimum standards of qualifications for admission to the learned professions, for men whom it cannot train. Or it can supervise examinations and enforce the standards which lawful authority shall determine. In all the states we have been too prone to undertake to establish the learned professions upon insufficient foundations of learning. Some states have already seen the trouble and are correcting it. This state will soon be likely to take decisive

action in that direction. Intending students will naturally press into the professions as rapidly as they are allowed, but experience shows that they will also cheerfully meet any reasonable exactions that are imposed. What greater service can be rendered to the skillful practice of medicine in this day of marvelous advancement of medical science, what greater service to the healthful administration of the law, than by closing up the avenues to those noble professions against all who have not had at least an elementary foundation broad enough and strong enough to bear the superstructure of professional training and meet the exigencies of professional life?

What is true of entrance to the professions is equally true of entrance to the civil service of the state or its sub-divisions. The time has surely come when minor positions in the civil service should be put upon the merit basis, or when aspirants to the service should at least show a minimum of intellectual qualifications equal to the intelligent administration of the duties they wish to assume.

The State University may effectually support the interests of education in the public penal and charitable institutions of the state. Their life may be made more tolerable, their results more beneficent, by work which occupies the time and improves the minds of the unfortunate inmates.

The State University may easily, if the facilities and means are provided, render an invaluable, a much greater and more acceptable public, service, by scientific examinations of innumerable matters closely related to the life of the people. We should be equipped to analyze the waters of the state; we should sustain and help the movement against adulterated food supplies; our laboratories should tell us how to put our building stones and clays to their best uses; our engineers should tell us how to get the most out of and make the largest market for our coal products. There might well be few days in the year in which the University could not enlarge the

scope of its work and render a still more substantial service, which it is anxious to render, to citizens, organizations, and the public boards and institutions of the state, through examinations and researches of this character, if its facilities and equipment were somewhat enlarged.

It is bound to aid the public libraries, stimulate healthful discussion, promote the organizations which have social, religious, literary, historical, civic, or economic ends in view. In a word, it is to promote the institutional life of the state to the extent of its power, for this institutional life is the foundation upon which the temple rests.

It may appropriately become the safe repository of the historical papers and scientific collections of the state, and it can augment these invaluable papers and collections and use them to advantage in its work. Indeed, it cannot do what it may, and what the people of the state want done, along historical and scientific lines without them.

The State University is bound to keep all its laboratories in operation; it is bound to prosecute all lines of research and give to the world the results of its experiments and investigations.

It is bound to bring its experiments and researches to bear upon the life and circumstances and opportunities of the people. The state should continually re-inforce it, so that it may promote these ends and enlarge its usefulness in the practical affairs of the people. As we carry on this work our numbers will obviously increase. The different departments and classes of our work will supplement and aid each other; we shall send out more graduates; we shall radiate more influence; our support will strengthen; we shall come to have a more vital connection with the life of the commonwealth, and come to be, in truth and fact, the University of the People.

## THE STATE SCHOOL SYSTEM.

The State University is unworthy of the state, and of the name it bears, unless it lives in close and sympathetic relations with all public educational work. It is to encourage and cherish all other universities, help them whenever it can, and get their help whenever it can. It is to uphold the hands of the State Department of Public Instruction. It is to articulate sharply with the public school system, of which it, itself, only constitutes the highest grades. The course of work should be consistent and uninterrupted from the first day in the kindergarten to graduation day in the University. Uplifting educational influences come from above rather than from below. Upon the extent, the kind, and the quality of work done in the universities depends the growth of the secondary schools, and, in turn, upon what is done in the secondary schools depends the quality of work in the elementary schools. And how much the common schools need help? I say nothing now different from what I have said during all the years of my service in their supervision. The teachers are worthy, conscientious, industrious, and poorly paid. But they are too commonly unprepared for a professional and scientific service, and teaching is not teaching, if not scientific. Thousands of children, all over the land, are thirsting for a management which is rational, and for instruction which is scientific. It is safe to say that there is no one step which would do more for the State of Illinois to-day than to fix and enforce a minimum standard of intellectual qualifications, uniform throughout the state, as a condition of admission to the teaching service in the public schools, and to provide for the advancement of teachers and for security of position on the basis of merit. It would develop a new and a more intelligent public interest in the professional preparation of teachers and it would, in more ways than I can here suggest, stimulate the educational energy of the state. I take it the



State University is to know something of the circumstances in the schools, and that it is to be studious of public school problems. It is to gather up the world's experience and most advanced thought concerning the construction of buildings, the training of teachers, the courses of work and the development of minds. It is to have opinions, and express them upon all matters which concern their welfare. It is not to speak in a far-away, autocratic, disinterested fashion; it is not to involve and mystify; it is not to attempt the unattainable; it is to walk upon the earth among people who yet live in the body and amidst circumstances that are not ideal but real. It is to be sympathetic in any event, and helpful wherever it can. It is to be sure of the truth concerning the work in the schools, and, being sure, it is to speak it in the interests of helpless children, the dearest possessions of the people, the greatest concern of the state.

#### CONCLUSION.

I have now suggested, necessarily in a very incomplete and superficial way, some phases of the work which may well be carried on here, and some of the influences which may well radiate from this seat of learning. But there are no limits to be set. In practical administration, every day and every occurrence will indicate new avenues of usefulness. The State University is to seize upon all opportunities for being serviceable to the people. So far as it can it is to call to its aid all the forces, and it is to promote all the influences which make for commercial, ethical, intellectual primacy, for the peace and happiness and strength of the commonwealth.

The State of Illinois has been wonderfully engrossed in affairs. She has hardly done what she ought to make a great state university. In the early days she was for a long time deaf to the entreaties of her best thinkers. She allowed all her great associates in the old Northwest Territory to precede

her, and she certainly gave the two at the north a great lead. Otherwise, her history has more than been abreast of theirs. But what influences their universities have exerted! If she had founded her university as early as they did, if she had listened to the words of her literary and scientific men, there would have been other imposing buildings upon our grounds, other departments in our work, thousands of students in our classes and laboratories, and the influence of the University would be doubly felt in every part and every institution of our magnificent territory. Late in making a start, giving the University but a lame support for twenty years, she has at last seen the excellence of its work and felt the influence of its alumni, and begun a more generous, a broader, and a wiser policy. Will she see clearly, and act promptly and adequately now? She is a great, rich state, out of debt, and growing richer and stronger every year. Money is, and will be, of small account, and university influence is, and will be, everything to her in the coming years. She can afford to do whatever it is well to do. She is not to wait for exigencies. She is bound to take all precautions and put up all the safeguards she can. She is going to do so. She will not change her policy. Her policy is right. She is going ahead. Why not do it swiftly and effectually? Why should she take another twenty-five years to accomplish beneficent action which might as well be completed in five years? One mill on a dollar of her assessable valuation, which the census authorities say represents but twenty per cent. of her real wealth, for three years, for buildings and equipment, and then one-fifth of one mill annually for operating expenses, would put the University in the position it should occupy, and would be an investment which would yield larger returns to the state than any other she can make. Will she do it?

We will turn our faces to the east. We will wear our hearts upon our sleeves. We will dwell together in harmony. We will not simply tolerate, we will sympathize with the stu-

dents in all the natural feelings of youth: we will act with them whenever we can that we may keep them with us at vital points. We will remember that work is the best preventive of troubles. We will stand up abreast of the foremost universities of the land, so far as we can: we will try to make our work count in all the affairs of the people: we will be jealous of the good name of the state, and we will have confidence that she will do what she easily may to make her State University the strongest influence for good within her borders, indeed the brightest jewel in her crown.

In the words which Mrs. Alice Freeman Palmer puts upon the world-wide motto of Edward Everett Hale:

"Look up, not down!" Do you see how the tree-top  
Rejoices in sunshine denied to its root?  
And hear how the lark, gazing skyward, is flooding  
The world with its song while the ground bird is mute?

"Look out, and not in!" See the sap rushing outward  
In leaf, bud and blossom; all winter it lay  
Imprisoned while earth wore a white desolation;  
For nature is glad with the beauty of May.

"Look forward, not back!" 'Tis the chant of creation,  
The chime of the seasons as onward they roll;  
'Tis the pulse of the world, 'tis the hope of the nation,  
'Tis the voice of our God in the depths of the soul.

"Lend a hand! Like the sun that turns night into morning;  
The moon that drives storm-driven sailors to land;  
Ah, life were worth living, with this for the watchword:  
"Look up, out, and forward, and each lend a hand!"

The Glee Club sang the University Song—words by Franklin G. Carnahan, '92; music by William L. Steele, '96.

*Vivace* *Our Dear Illinois*

The musical score is written for piano and voice. It consists of six systems of music. The first system begins with a treble clef, a key signature of one flat (B-flat), and a 2/4 time signature. The tempo is marked 'Vivace'. The lyrics are: 'O come let us sing, with our hearts full of joy'. The second system continues the lyrics: 'song full of praises for dear Illinois. We exult in her glory, oh'. The third system continues: 'may it not fade Till the last of her children in death shall be laid. Illi-'. The fourth system is the start of the chorus, with the lyrics: 'nois, Illinois! O what pleasure, what joy Our college days bring us at'. The fifth system continues: 'old Illinois. So join in the chorus, for no power can destroy The'. The sixth system concludes with: 'love that we bear thee, dear old Illinois.' The score includes various musical notations such as dynamics (f, ff), articulation (accents), and phrasing slurs. The piano accompaniment features a steady rhythmic pattern in the right hand and a more active bass line in the left hand.

O come let us sing, with our hearts full of joy *R*

song full of praises for dear Illinois. We exult in her glory, oh

may it not fade Till the last of her children in death shall be laid. Illi-

*Chorus* *Bass Solo*  
nois, Illinois! O what pleasure, what joy Our college days bring us at

old Illinois. *ff* So join in the chorus, for no power can destroy The

love that we bear thee, dear old Illinois.

We'll never forget the days college life brought—  
So free from all sorrow, with pleasure so fraught;  
We'll never forget the friends, bound heart to heart—  
Firm friends when together, firm friends when apart.

*Chorus.*

So, dear alma mater, we'll never forget  
How much we all owe thee, how great is our debt;  
And from every hilltop, and from every vale,  
We'll shout Illinois till thy name shall prevail.

*Chorus.*

# ENGINEERING HALL.

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## HISTORY.

After a careful consideration of the needs of the University, the board of trustees asked the Thirty-Eighth General Assembly of the State of Illinois to appropriate \$160,000, with which to erect and equip a building for the College of Engineering. The appropriation was made by an act approved June 6, 1893, in force July 1, 1893.

At its meeting of June 7, 1893, the board of trustees directed its committee on buildings and grounds, of which Messrs. Bullard, Morgan, and Morrison were the members, to secure plans for the new building, and two days later the committee called for designs, to be presented June 30th, restricting the call, in compliance with a request made by alumni of the University, to graduates from the course in architecture. Four premiums were offered, one of \$500, one of \$300, one of \$200, and one of \$100. Fifteen plans were received. That presented by George W. Bullard, '82, of Tacoma, Washington, was awarded the first premium at a meeting of the board of trustees held July 5, 1893, and Mr. Bullard was made the architect of the building. After some changes, which were found advisable, had been made in the accepted plans, specifications were prepared and the committee advertised for bids to be presented September 11th. The committee found the bids unsatisfactory, and recommended to the board of trustees at its meeting the following day that they be rejected. The committee also recommended that the southeast part of the arboretum be chosen as the site for the building. Both recommendations were adopted, and bids were

again called for to be presented October 5th, at which date the contract for the erection and completion was awarded to Yeager & Schultz, of Danville, Illinois.

The corner stone was laid Dec. 13, 1893, with ceremonies as follows:

PROGRAMME.

PART I.

IN THE CHAPEL, 1:15 P. M.

- Music, UNIVERSITY BAND.
- Music, GLEE CLUB.
- Address,  
HON. NELSON W. GRAHAM, PRESIDENT BOARD OF TRUSTEES.
- Address, DR. T. J. BURRILL, ACTING REGENT.
- Music, MANDOLIN TRIO.
- Address,  
DR. ROBERT HENRY THURSTON, DIRECTOR SIBLEY COLLEGE, CORNELL UNIVERSITY.
- Music, GLEE CLUB.
- Address,  
IRA O. BAKER, PROFESSOR CIVIL ENGINEERING, UNIVERSITY OF ILLINOIS.
- Address,  
LEVI P. ATWOOD, MEMBER SENIOR CLASS, UNIVERSITY OF ILLINOIS.
- Music, UNIVERSITY BAND.

PART II.

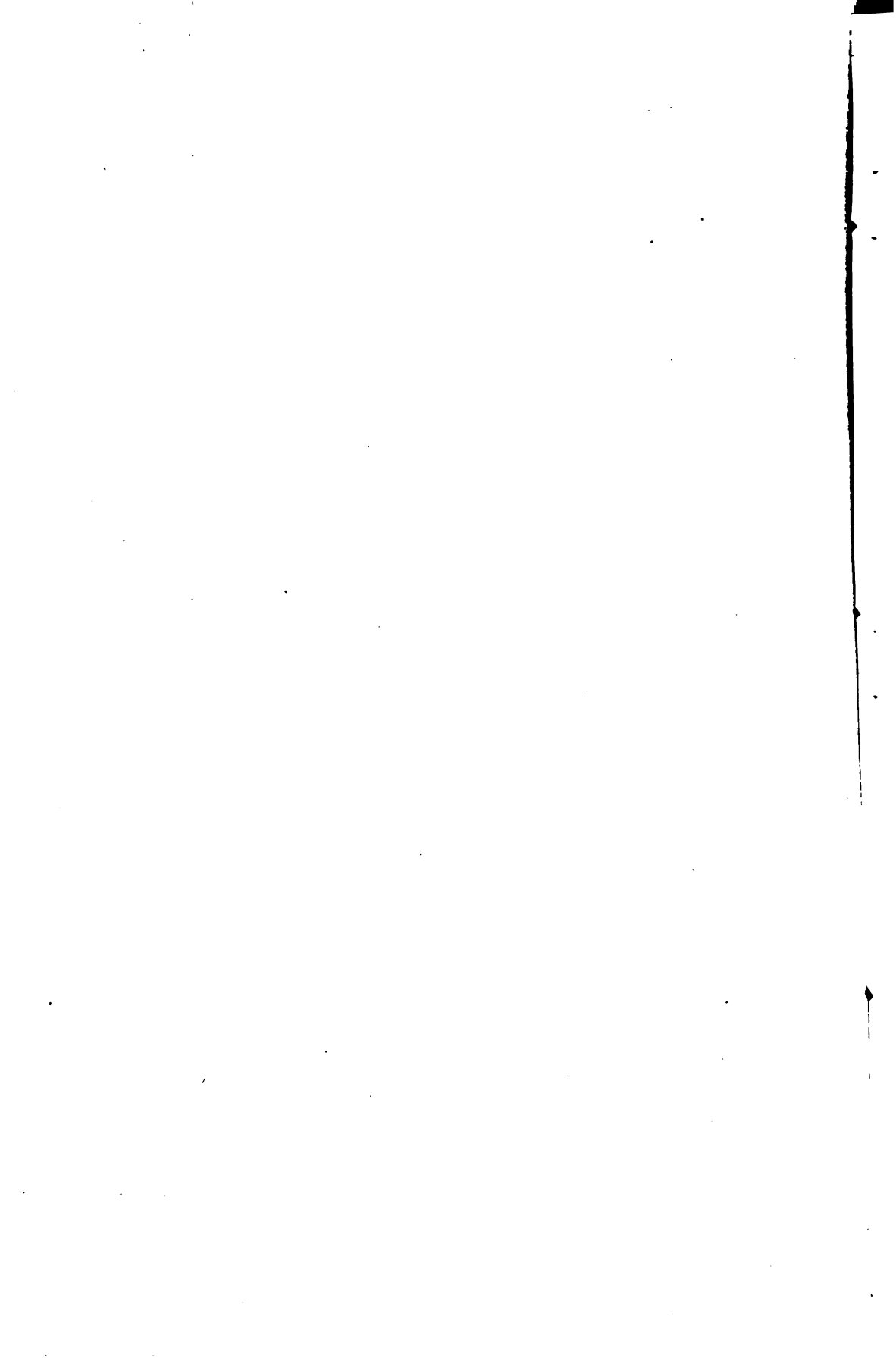
AT THE BUILDING.

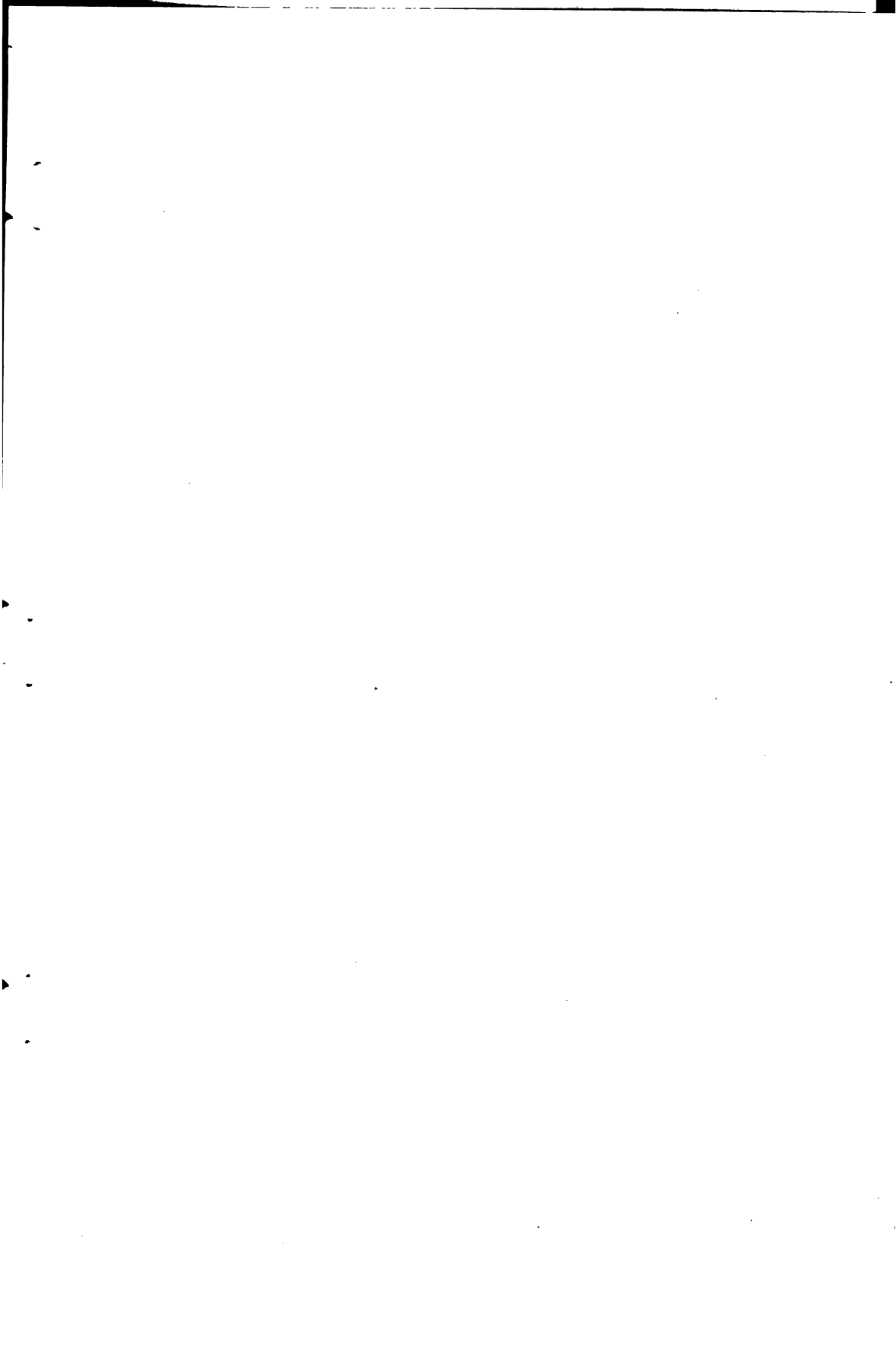
Setting the Corner Stone,

N. CLIFFORD RICKER, DEAN COLLEGE OF ENGINEERING,  
UNIVERSITY OF ILLINOIS.

At the meeting of the board of trustees held September 25, 1894, it was decided to dedicate Engineering Hall, November 15th, and the same committee which had been given charge of the inauguration ceremonies was directed to arrange for the dedication.









From Harper's Weekly.

ENGINEERING HALL

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# DEDICATION OF ENGINEERING HALL.

The dedicatory exercises were held in Military Hall at 7:30 o'clock P. M., and were as follows:

## PROGRAMME.

Overture, "World's Peace Jubilee," (*Beyer*)—

UNIVERSITY MILITARY BAND.

Music, "On Deck Polka," (*Kral*)—

UNIVERSITY MANDOLIN AND GUITAR CLUB.

Introductory Remarks,

PRESIDENT DRAPER.

Address,

PRESIDENT CHARLES KENDALL ADAMS, LL.D., UNIVERSITY OF WISCONSIN.

Music, "Down by the Riverside"—

UNIVERSITY GLEE CLUB.

Address,

GENERAL WILLIAM SOOY SMITH, OF CHICAGO.

Overture, (*Theo. Mozas*)—

UNIVERSITY ORCHESTRA.

## BENEDICTION.

## DEDICATION EXERCISES.

No procession was formed in the evening, but the audience was seated as it had been in the afternoon at the inauguration. The vast drill room of Military Hall was crowded to the doors at 7:30 in the evening by an interested audience intent upon participating in the exercises which were to dedicate

formally the new Engineering Hall to the uses of the College of Engineering. President Draper presided. Governor Altgeld was at his right, and President Adams, of the University of Wisconsin, at his left hand. The board of trustees, faculty, and prominent guests occupied the platform.

The exercises were opened by the overture—“*World's Peace Jubilee*” (Beyer) by the University Military Band.

This was followed by the “*On Deck Polka*” (Kral) by the University Mandolin and Guitar Club.

The introductory remarks by the President were as follows:

PRESIDENT DRAPER:—In the exercises of the afternoon we have been trying to say a good word for each member of our family and to give the strongest help to the ones who stood in the greatest need. We meet to-night to celebrate the growth and success of the big brother of the family and to put him into a new house better suited to his proportions, his age, and his work than any we have ever before been able to afford him.

The University is divided into four colleges: Literature, Engineering, Science, and Agriculture, and the greatest of these is Engineering. The College of Engineering consists primarily of the five departments of architecture, civil engineering, electrical engineering, mechanical engineering, and municipal and sanitary engineering. The new building contains the lecture, recitation, and drawing rooms for the advanced work of these departments, and also the laboratories and lecture rooms of the department of physics.

Engineering Hall is one of the largest and finest buildings devoted to engineering education in this country. It has a front of 200 feet, with wings at either end 76 feet deep, while the central portion extends back 140 feet. It is four stories in height. The first story is of Cleveland sandstone, and the remainder are of buff pressed brick, with terra cotta trimmings. The mill system of slow burning construction is employed throughout. Plate glass windows, Washington fir,

and polished oak, with other finishings in keeping, make the interior very attractive. Steam heat, mechanical ventilation, gas and electric lights will be used. In the planning of the building, the greatest thought and care have been given to the arrangement of the rooms for purposes of instruction. Lecture rooms, drafting rooms, seminary rooms, studios, offices, etc., have been planned for their especial purposes. The furniture, also, has been designed to meet the requirements of modern engineering instruction.

The architect is Mr. George W. Bullard, of Tacoma, Washington, a graduate of our architectural department in the class of 1882. Mr. Bullard's design was selected after a spirited competition among the architectural graduates of this institution. Messrs. Yeager & Schultz, of Danville, were the contractors for the erection of the building, and it seems clear that they have done their work well.

The building cost \$160,000, which sum was appropriated by the legislature for that purpose, and the University desires to extend its appreciation of this substantial approval of its work, and is not unmindful of the obligation to make proper use of these increased facilities in the education of the sons of this imperial state of the west.

Among the friends of the institution concerned in the legislation making possible this magnificent building, two are deserving of special mention. Governor Altgeld's influence was unceasingly exerted, and at the critical moment his action was decisive. An honored son of the University, Senator Henry M. Dunlap, class of '75, from his high position in the upper house of the legislature, by common consent promoted the enterprise with untiring and unswerving loyalty, as well as with consummate ability and skill. To these good friends, who are honored guests to-night, we tender our most sincere and grateful acknowledgements. The building committee of the board of trustees, Messrs. Bullard, Morrison, and Morgan, deserve the gratitude of the state for their arduous and unre-

quited labors. The people of the State of Illinois should hold in grateful acknowledgement all who have aided in the erection of another building for higher education, and should be strengthened in their determination to make their own University stand at the head of similar institutions.

The rights of other speakers do not permit any extended remarks concerning the work of the College of Engineering, but I may say that the University rejoices at its success. The University of Illinois was the first institution in this country to give educational shop practice as a means of instruction, a custom now followed by all engineering schools of any prominence, and was also the first to introduce the so-called Russian system of shop practice, a system now universally employed in shop schools. This institution was one of the first three in the United States to give physical laboratory practice, a method now approved by all educators as the only proper one for teaching this very important subject. In the number of engineering students our University is excelled by only three institutions in the United States. Our graduates, by their ability as architects and engineers, have given substantial evidence of the quality of the instruction.

We are all justified in being joyous to-night, as we congratulate the University and the state upon the larger opportunities which are opening before us, and I know you will all join me in saying God speed to the College of Engineering, as it enters its new and magnificent home and presses on to wider usefulness and still higher successes.

But I must not detain you a moment longer from the great pleasure of the evening. We have enjoyed the company of many college and university presidents to-day, and we are now to hear one of the most experienced and distinguished of them all. I have the honor to present to you President Charles Kendall Adams, of the University of Wisconsin. The subject of his address is "University Ideals."

ADDRESS:

## UNIVERSITY IDEALS,

BY

CHARLES KENDALL ADAMS, LL.D.,  
PRESIDENT OF THE UNIVERSITY OF WISCONSIN.

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*Mr. President, Governor Altgeld, Gentlemen of the Board of Trustees, and Ladies, and Gentlemen:*

Before entering upon the discussion of the subject I have chosen for this hour, I must congratulate you on the completion of the noble structure erected for the departments of Engineering. It is worthy of a great university, and a great state. As I contemplate what you are doing here, and what is doing in adjacent states, it seems to me that we are entering upon a new era in the history of advanced education. To be convinced of this fact we have only to look around us. For the future support of its University the great state of Ohio has recently provided for an additional tax upon all the property of the state of about ninety thousand dollars a year. The last legislature that met in Michigan passed a statute which will yield an addition of one hundred and twenty thousand dollars a year to the University at Ann Arbor. Wisconsin gave to its University for many years the benefit of a tax yielding an annual income of eighty thousand dollars, and the legislature four years ago supplemented that with an addition of nearly as much more. Minnesota is giving bountiful supplies to her University from a generous hand; and the University of Missouri, after receiving for years a



support entirely creditable to the state, since her great fire has risen from the ashes, a modern Phoenix, into new splendor and promise. Since the Spring of 1892 the legislature of Missouri has appropriated to its University more than a million and a half of dollars.

I cannot but think that the University of Illinois is about to enter upon a new and far greater period of prosperity. When I think of all that is possible in this state, with agricultural resources that are perhaps unrivaled among the states of the Union; with supplies of coal that are enough for the manufactures of an empire; with the great metropolis at the north into whose lap all the states of the Northwest, if not all the states of the Union, are pouring tribute; when I think of these things, my imagination makes a vivid picture of the vast possibilities of the University yet to be built up upon these spacious and beautiful grounds. I have long held that the prosperity of every university is helpful to the prosperity of every other. The growth of the other universities will help you, and your growth will help them. It is with pleasure, therefore, that, coming from another state, as I do, I anticipate a new and more prosperous career for this institution of learning.

Standing in the open door of the future, I ask myself what should be attempted in order to make this University all that it ought to be. What should be the scope of the scholastic activities here undertaken? What should a state university endeavor to do? What, at this period of the nineteenth century, should be the UNIVERSITY IDEALS toward which we should strive? It is to a consideration of these questions that I invite your attention.

The first universities were founded for the purpose of giving men the proper training for the learned professions. Accordingly, all the universities of the Middle Ages were organized upon the basis of four general departments: those devoted to philosophy, theology, medicine, and law. It was

natural that the education offered should consist of two general parts: Those studies which were regarded as disciplinary; and those which were of such technical character as would fit men for practice in the law, in medicine, and in theology. This plan of organization continued not only through the Middle Ages but through modern times down until after the beginning of the present century. But, in the development of civilization, a radical change took place about one hundred years ago. I refer not so much to that revolutionary spirit which brought large numbers of people into an intelligent hope of a freer and better life, as to those mechanical inventions which have wrought a similar revolution in the industrial world. These changes required a very essential modification of the education that had previously been given. What has often been called the age of invention created everywhere a demand for education extending to the means of putting the new inventions into practical use. The application of steam to motive power called for complicated and exact knowledge in a wide range of subjects. It called for varied and complicated machines for doing every variety of work. The demand for the transportation of the various products of the earth included highways, railroads, and steamships. Here were new industries of surpassing importance. The energies of machinery in every mine and on every hillside called aloud for intelligent guidance; and consequently people everywhere saw the necessity of a kind of education quite different from any that had before been provided for. It was in response to this necessity that technical schools sprung up in Germany, in France, in England, and in other parts of the old world.

In the United States the same impulse was felt, because there were the same causes, but conditions here were somewhat different, and consequently the problem had to be solved in a somewhat different way. In the older states, having old universities, it was but natural that the same course should

be pursued that had been pursued in Europe. New schools were established. Here and there technical schools were founded, as for example, the Van Rensselaer Institute at Troy, the Institute of Technology at Boston, the Stevens Institute at Hoboken, the Case School at Cleveland, and the Rose Polytechnic at Terre Haute.

But while generally in the older states and occasionally in the newer, separate schools were founded, in the newer states having state universities, such schools were commonly united with the other interests of higher education. And so we find, as the general result of these impulses and conditions, that the modern state university generally unites three great groups of interests:—those disciplinary studies which best fit men for carrying on advanced work of all kinds; secondly, those studies which are best adapted to fit men for the old professions; and, thirdly, those special technical studies that are called for by the exigencies of a new civilization.

In a general way, then, the modern state university, if it would be complete, must offer the necessary disciplinary studies; it must offer those studies which are best adapted to fit students to deal primarily with men; and it must also offer those studies which are best adapted to fit students to deal primarily with material things.

Now, we must not lose sight of the fact that the new civilization has not displaced the old, but has rather supplemented it. The learned professions, or rather I should say perhaps those professions of law, medicine, theology, and philosophy, which used to be considered the learned professions, are no less important at the present day than they were centuries ago. They are as much sought, and they are as much required, as they were when ten thousand students were fired with enthusiasm at Bologna, twenty thousand at Oxford, and thirty thousand at Paris. And so it still remains true that even within the domain of the old university education, as I have already intimated, two kinds of training are absolutely essential.

The first of these general categories consists of those elementary and disciplinary studies that are regarded as best adapted to the work of building up the individual mind and fitting it for subsequent professional work. What are the essential elements of such a training? For all kinds of success, the powers of discriminating perception must be developed and cultivated. To accomplish this work I believe it is still true that the study of language, especially a highly inflected and conjugated language, is best adapted. The study of Nature, though, as I think, in a subordinate degree, is adapted to the same end. I say, in a subordinate degree, because the study of Nature is very largely a study of facts, many of which it is impossible to explain. We must often content ourselves with the fact itself. In the study of a language, on the other hand, we not only find the fact, but we either feel that we understand the reason for it, or at least that a reason exists which with proper investigation would be within the range of our comprehension. So long, therefore, as we need the powers of discriminating perception, I believe that studies in the most highly organized and articulated languages will continue to be of the greatest importance.

Then we have to provide for the strengthening of the reasoning faculties. This part of education, according to the teaching of all ages, has best been accomplished by studies in the mathematics, and studies in logic. While I believe that for the purposes of a general education studies in the mathematics can easily be carried too far (with the result which Sir William Hamilton pointed out, of giving men the habit of reasoning in straight lines where all the premises are well understood, whereas, in ordinary life such problems seldom occur), it still remains true, that for cultivating a reasoning habit a sufficient amount of study in the mathematics and in logic has never yet been excelled.

Then we must have studies which develop what is known as the judgment. The judgment, I suppose, may be defined as that ability which enables those possessing it to arrive at correct conclusions from imperfect premises; the habit of contingent reasoning—the habit, if you please, of guessing aright—what may be called the business man's knack of reasoning from probabilities as premises, and arriving at conclusions that are generally correct. This gift has well been called the most valuable of all gifts. Society is always looking for men with what are called "level heads," which is only another way of saying they are looking for men of good judgment. Now, there are doubtless many ways in which this ability, known as good judgment, can be strengthened, if not acquired. But, in a general way, it may be said that it is usually acquired by means of a large familiarity with human nature and human affairs. Herein is one of the advantages of the large university. While perhaps the perceptive faculties and the reasoning faculties may as well be trained in a small college as in a large one, I am sure that for that broader acquaintance with men which tends to develop the judgment, the larger institution has its advantages. Among the studies for this purpose, undoubtedly the study of history is one of the most useful. It may not be safe to declare with confidence that a man ever learns from the study of history just how to deal with any particular question, but he will acquire the invaluable habit of eliminating one factor and another, of judging of the force of this, that, and the other circumstance, and, finally, of arriving at a substantially accurate conclusion on the subject that is under investigation. If we look over the past and try to ascertain how those men have been trained who have had greatest influence in shaping national affairs, we shall generally find either that they have mingled much with their fellow men, or that they have carefully studied the great events of history and thought much upon their great problems. Leading to the same end are all

of those studies which have to do with men, in their relations with one another, including, of course, studies in sociology, in political economy, and in literature.

Besides the power of perception, the reasoning faculty, and the judgment, there is another necessity of the most absolute and imperative nature. We may have the powers of perception developed so as to enable us to see instantly the most subtle relations of all the ordinary objects brought before us; we may have our reasoning faculties so developed that we can put together the facts we perceive and draw accurate conclusions as to the results that will follow; we may in addition have those qualities of good judgment that will anticipate what men will do under all ordinary conditions; and yet, if we have not the impulses to use these abilities in the right direction, there is no assurance that they will not be used for the injury rather than the benefit of mankind. Knowledge is power; but power, unguided by right motives and impulses, is as likely to harm mankind as to help it. Whether the locomotive will take its passengers safely to their destination, or take them to destruction, depends upon the way the guiding switch is turned; and if the determining will has not a purpose that will turn it in the right direction, the more the power, the greater the danger. It follows that in all our education we must have a training of the moral faculties or there can be no assurance that the powers and accomplishments we give our sons and daughters will be used for the good of society. I desire to present this necessity with emphasis; for, as civilization becomes more and more complicated, and the pressure here and there comes to be more and more severe, we shall find that there is no guarantee that intelligence will be put to good uses, save in the general prevalence of correct ethical standards, and the supremacy of right moral motives. What but a general absence of such motives can explain the appalling revelations recently made of the condition of the great city of New York?

It is not within my purpose to-day to point out the means by which a moral reformation is to be brought about. Doubtless it will have to be done partly in the churches, partly in the family, and partly in the elementary schools. It is enough in this connection to say that, in my opinion, it is by far the most crying educational need of the hour, and that it calls aloud for the consideration of the best educational thought of the time.

Thus far I have said nothing of those studies which are ordinarily designated as *informing* studies; but I have abstained from speaking of them with a particular object in view. I believe that the most pernicious of all the educational heresies of the past generation has been the prevailing notion in regard to what are sometimes spoken of as "*practical studies*." The clamor has been for knowledge that can be applied to the ordinary affairs of life. Now, in regard to all such demands, I am in the habit of asking: *What is the knowledge that can be applied to the various affairs of life?* Does the successful business man on the farm, in the store, or in the factory, ever use algebra, or geometry, or botany, or chemistry, or history, or any of the ordinary branches taught in the schools? Of what he actually learns in school, he uses reading and writing and a little arithmetic; but how much more? Do we not forget with the most astonishing facility and rapidity what we are taught in the schools? How many of us remember the chemistry and the botany and the advanced mathematics and the history and the Latin and the Greek over which we wearied and perhaps tortured our brains while we were in college or before? I am not, of course, speaking of professional mathematicians, or chemists, or botanists, or linguists, but of the great mass of non-professional men. And yet, no one of us would part with the results of our labors in these directions. We believe our studies gave us a certain comprehensiveness of view, a certain breadth of method and of thought; we did acquire certain disciplinary

results from all of these laborious efforts, and, as we think the matter over, the conclusion is forced upon us that what we gained from all these efforts, was chiefly disciplinary in its nature. Rarely, I fear, did we get enough knowledge of any particular thing to make an abiding practical impression on our minds, unless we followed up that particular thing after we left college. The belief is sometimes entertained that we forget languages more readily than other subjects, but this impression, I believe, is erroneous. Even if the pressing distractions of life drive all our college attainments out of our heads, we shall still find, I think, that the remnants of a language linger with us even after the last remains of many of the so called "*practical studies*" have taken their departure. We can still read a little Latin and a little Greek, after we have forgotten how to analyze a flower, or transpose a chemical formula.

Now, in view of these facts I am obliged to conclude that the most valuable, even the most practical studies, are those that give us the largest disciplinary results. If, then, we would secure—for ourselves the best disciplinary preparation for the professions, whatever else we do, we must drill our pupils thoroughly in those studies which are best adapted to develop their minds. When this is done in the most satisfactory and comprehensive way, the pupil is ready for the more limited and technical studies of a profession.

At this point I would guard against misunderstanding. I would not claim that the studies I have named are to be used to the exclusion of others. Even an Englishman cannot live on roast beef and plum pudding alone. What I mean is, that *if* the most perfect mental health and growth is to be secured, there must be a very large place given to what are to be deemed the essentials of the largest and truest development. Have whatever garnishments you please, but do not suppose that you can thrive on mushrooms and water-cresses alone.

Nor would I assert that any particular course of training is absolutely essential to the end aimed at. If the qualities



of mind and heart I have named are secured, the possessor is educated, whether he has been in the schools or not. The end may have been reached by private study alone. None but a pedant would claim that a collegiate education is essential to distinction. We may not claim that there is no way of going from Champaign to New York except by railroad. A man may say to me, I find the railroad tiresome, and I wish to learn something of other things, of a variety of things. So he takes a little on horseback, a little by canal boat, a little by steamer, a little by stage coach, and ends his journey on a bicycle. Who would not say to such a man: Yes, you have indeed learned something, but you have paid too large a price for your variety of small knowledge. So I would say to the father and the mother of the pupils in our schools, even up to the middle of the ordinary college course: Make provision for the great essentials. Your boys and girls do not need an infinite variety of elementary knowledge; on the contrary, they need the most vigorous and capacious minds you can possibly give them. And these are not to be formed by the sweets and "goodies" of education, but by solid food, nutritious in kind, and abundant in amount.

Herein also lies the secret of those men who have attained great success, without the education of the schools. Take an extreme example—that of the great martyr president, whose career gives a perennial interest to all the regions of central Illinois. If the standards of education I have presented are applied to Lincoln's development, he will be found to have been essentially a well educated man. He did not go by rail, but on foot and by canal boat. But he kept his eyes and ears open for all he could see and hear; he studied grammar and geometry with the utmost diligence and thoroughness; he read the history of the United States with extraordinary care; he passed an unusual proportion of his life in most intimate association with what may be called the average grade of his fellow men; and he had extraordinary keenness of obser-

vation and mental enterprise in tracing out causes and effects. Thus he had all the characteristics of the education I have described. So it will often be found that the so called self-made men of success have in large measure the same characteristics. In these elements we see, not only why so many men without the education of the schools attain large success, but also why so many that have been regularly fed with the fringes and shreds of knowledge in the schools have proved to be only a source of disappointment and sorrow.

There is another necessity of a good preliminary training that must not be passed over in silence. I mean what may be called the element of intellectual enterprise or enthusiasm. Success depends not so much on what we have learned at this stage of our education as upon the tastes and enthusiasms we have acquired. The student who feels that at the end of his disciplinary work he has nothing more to do with any of the studies he has pursued, is never likely to reach the highest attainments, or the highest successes. We grow by our enthusiasms. It is not necessary that they be many in number, but they must be genuine and they must be persistent. Fortunate indeed is the student who acquires an enthusiastic fondness for the literature of some particular study and all its cognate attendants. It will lead him into the pleasant paths of higher knowledge, and make him content with nothing short of the very best. It will give him the blessed companionship of the good and great of all time who have contributed to the knowledge with which he is in love. It will enliven the dull hours of life, or rather it will drive them quite away. In the end, it will give him the halo that awaits the head of the genuine scholar, and will lead him to know what Emerson meant when, in his old age, referring to his college days, he said: "Neither years nor books have yet availed to extirpate a prejudice then rooted in me that a scholar is the favorite of heaven and earth, the excellency of his country, the happiest of men."

I come now to the second general branch of my subject, namely, an inquiry into the general nature of the professional education required by the times in which we live. I remarked that the persons seeking the professions of theology, law, medicine, and philosophy are no less numerous than they were hundreds of years ago. But there is another fact to be considered of even greater importance. I mean the demands that are put upon the professions at the present day, as compared with the demands that formerly presented themselves. How enormously have the sources of information in all the professions been increased within the last century. Glance for a moment at the present requirements. Formerly the whole of the law was embodied in the very few volumes constituting the *Corpus Juris Civilis*. At the present day the lawyer must have not only a more or less accurate knowledge of the statutes of the country at large, and of the several states in which he may be called to practice, but must also know what a hundred courts have held on every one of a thousand different subjects. He should go even further than that. He should know something of the science of jurisprudence. He should understand how the law has its roots back in the history of civilization, as well as what fundamental ideas have grown up from the past, and imparted life and significance and character to the laws of the present day. All this is now required of a man who would practice law successfully in what Judge Holmes called "a large way."

Then look at the profession of medicine. Up to a hundred years ago it could hardly be said that any great advances had been made within two thousand years. The precepts of Hippocrates and Galen, in essential character, were not unlike those generally adopted by the profession in the eighteenth century. But what a marvelous revolution in medicine has resulted from the modern discoveries! The science of bacteriology has completely revolutionized all our theories of disease. We now see how comprehensively true it is that the

normal state of man is one of health, and that disease, in its various forms, is not merely a disorganized condition, but is often the result of an actual living force introduced into the system in the form of disease germs. How completely has this theory transformed the science of surgery! Antiseptic methods have taught the surgeon's knife to explore every part of the human body with impunity and confidence, and to perform what would have been regarded as miracles indeed, not more than twenty-five years ago. If the effects of these discoveries have not been so completely revolutionary upon medicine as upon surgery, they have at least already prepared the way for changes quite as important. We now know that the most malignant diseases, like cholera, smallpox, scarlet fever, and diphtheria are produced by the introduction into the system of living organisms, and we have learned that many of these malignant destroyers of life may be warded off, even if they may not be destroyed. We have recently learned that other diseases, less dreaded, perhaps, only because more familiar to us, are none the less products of noxious germs and none the less contagious. The approach of consumption is not heralded with notes of alarm, but since science has made it plain that this most insidious foe of humanity is caused by micro-organisms and that it is conveyed by microscopic purveyors of death from one person to another, surely it is not too much to hope that the way is opened for its ultimate extirpation. They now tell us that the only sense in which pulmonary disease can be inherited is the simple inheritance of a nature for which the micro-organisms have a peculiar affinity or fondness. At the present moment science seems to be upon the verge of discovering a universal law by which disease-producing germs may be destroyed. The vistas of nature seem opening to us in every direction. In all these subjects the farther we go, the more complicated the sources of knowledge become. Here, as

elsewhere, the higher we rise in the realm of research, the vaster the range of the field within our ken.

The more science does in the way of new revelations of this kind, the greater the demand for thorough and comprehensive knowledge. Matters of sanitary concern in our cities are determined, for the most part, by our engineers and our physicians; and there is laid upon the medical profession an obligation, which, in the light of all recent scientific knowledge, is vastly more important than any that was formerly acknowledged. Physiology, histology, and pathology, must be made to disclose their secrets, and give them up in all our medical schools. And I need hardly add that there should be not only a comprehensive technical knowledge, but also that enterprising intellectual spirit which keeps abreast with the latest revelations of science, and makes all knowledge the helpful handmaid of this noble profession.

Then take the profession of theology. It used to be said, —indeed, it was said by Macauley—that this was not, and could not be, a progressive science. It has been maintained that, inasmuch as theology rests upon revelation, it cannot be progressive, because revelation has been closed. The declaration seemed plausible, and was very generally accepted. At best, however, the assertion is founded upon a fallacy, and is only partially true. It might perhaps be comprehensively true, if we could be perfectly sure of the exact import of the revealed word. But the revelation sometimes seems contradictory, it is often obscure and requires interpretation. We do not know that in the various transcriptions and translations we have the revelation as it was originally given. Such questions have rent the church into sects and factions ever since it was founded. So long as any doubtful questions remain unsettled, there will be call for inquiry, for investigation, and for progress. It follows, that as new fields are opened, the call for intelligent and thoroughly trained investigators will be increased. It also follows, that as science and

archaeology and history are now yielding up their treasures as never before, so a more complete knowledge of these branches is demanded of those who would speak with assured authority. As the Professor at the Breakfast Table said years ago, the spirit of the modern age calls for the credentials of every creed and catechises every catechism.

Nor is this all. The clergy have to do not only with the relations of man to God, but also with the relations of man to man. So long as the second of the great new commandments remains that we are to love our neighbors as ourselves, so long the clergy will have their commission for an active interest in all the social relations of mankind. If the moral precepts of the Old Testament are not the same as those of the New, it follows that Christianity is an evolution. In the last century churches were built and colleges were founded with money systematically raised by lottery. To-day Christianity makes war upon the lottery as immoral and pernicious to society. Theology and Christianity alike are progressive. And as society becomes more and more complicated, the necessity of great knowledge and wisdom on the part of those who are to advise and direct becomes more and more imperative.

If we turn from the domain of law, medicine, and theology to the wider sphere of philosophy, we find the same necessity, if not even a greater. Within the term philosophy, in its original and comprehensive meaning, is included the love of all learning. It embraces all literature, all history, all science. It has for its aim the furnishing of the most complete educational outfit within either of these broad domains. It recognizes the fact that the modern authority should not only know everything possible of something, but should also know something of everything. It protests against a too concentrated specialization; and it insists that it is impossible to be eminent in any one branch of knowledge without having the potentiality of eminence in many others. It demands large-

ness of preparation, ever keeping in view the great truth—a hundred times more important now than it was when Webster uttered it—that however much the lower ranks of any profession may be crowded, there is always abundant room at the top. It resists the mad tendency to rush prematurely into the beginnings of professional life, knowing that it is not he who begins the long race first, but he who begins it in the best condition, that has the best chance. It is not content with the bare necessities of professional scholarship; it would adorn and enrich those necessities with tribute brought from every realm of knowledge.

As the wealth of the country increases, the number who can afford the most liberal training will become greater and greater. All knowledge is inclined to take on the historical form. It is impossible to know what *is*, without knowing what has been. Edison, the Modern Mercury of Science, has built up his lofty structure on foundations laid by Faraday, Henry, and Helmholtz; and even Darwin, a Conquerer greater than Alexander the Great, was the historian of Nature, before he would venture to explain Nature's laws. The great jurists who built that most enduring monument of Napoleon, the Napoleonic Code, like the builders of the Justinian Code, twelve hundred years before, simply brought together and framed into convenient form the legal learning of former ages. So it is in all the fields of knowledge—not only in law, in theology, and in medicine, but in literature, in science, and in art.

It is from this group of studies, which I have ranged under the term Philosophy, that the most thoroughly trained men in all our professions are to be recruited. These studies are in the largest sense preparatory to the largest professional work. If the elementary schools were here as judiciously organized, and as efficiently taught, as in some countries they are, our students, by reaching the university at a younger age would be able more generally to take the whole of the under-

graduate course before entering upon the more technical professional studies.

The vocation of the teacher must ever be one of growing importance. The impressive fact that we cannot inherit the education of our fathers, and that every child must begin where the first children outside the gates of Eden began, is enough to make the subject of education one of perennial and of ever increasing interest. The highest education provided is probably the best measure of civilization. As Coleridge said to Washington Alston, "Never judge of a work of art by its defects," so perhaps we ought not to judge even of a civilization by its defects; certainly we should not like to have our political institutions judged by the recent revelations of the defects of some of our city governments. It is at least a satisfaction to feel that our system of education is not to be judged altogether by the quality of our elementary schools. The schools always take their impulses and their inspirations from those above them. Harvard College was founded seven years before the common schools of Massachusetts were provided for; Columbia was chartered three years before the common school law of New York was enacted; and the University of Michigan, the Harvard of the West, was the predecessor, and to a large extent the organizer and inspirer, of the school system of the state. If we are to lift the schools, it must be by elevating the standards and the spirit of the colleges and universities.

Without doubt the greatest educational force of to-day is the press. It is a schoolmaster that, for better or for worse, sits at every breakfast table; that takes his place by our side on every railway train; that accompanies home the laborer at the end of his day's work, and sits with his family about the family hearth. The current history of the world is drawn into the press by an irresistible force of gravitation; and this history is given out to millions of people, practically inaccessible to all other forms of instruction. It brings the information



which the people desire, and it serves its viands according to popular taste. The discovery last night of a planet by the astronomer at the Cape of Good Hope; the latest fashion in the rings of Saturn as ascertained at the Lick Observatory; the tale of an Arctic explorer, reported to an enterprising interviewer while approaching the nearest port of civilization; the revolting details of the most recent divorce case; the most recent case of lynching; the latest treachery of a politician, and the latest defeat of China by Japan—all these, and a thousand more are spread out before us at the breakfast table as regularly as the coffee and the rolls. The news outruns the hours of the day in their westward race around the earth; at two in the afternoon the last sob of a dying Czar is heard on the shore of the Black Sea, and at noon of the same day his death is heralded in every newspaper office from Sandy Hook to the Golden Gate.

The people are indebted to the press not only for a large part of their knowledge, but also for a large part of their opinions. It uncovers and lets in the light upon the haunts of vice and rascality; it traces out the sinuous movements of villainy and crime; and, best of all, it collects the scattered rays of public sentiment into a fiery focus that burns and blasts the thieves and rascals of high and low degree. In our cities we have suffered more than any other nation from what George William Curtis, with a phrase worthy of Burke, characterized as "the generous carelessness of greatness." No people is so tolerant of the faults of its officials; but we have recently seen, what has indeed often been seen before, that when the press is thoroughly in earnest we may find redress even for the greatest wrongs. It was the press that blasted the villainy of Tweed; it was the press that has just blasted the greater villainy of Tammany Hall. Even the perfervid denunciations of Dr. Parkhurst were dependent upon the stentorian voice of the press to make themselves heard throughout the state. "The ocean," cried Wendell

Phillips, "is always pure, because it is always agitated." If public opinion is to be kept pure, it must be kept agitated; and the great agitator of public opinion is the public press.

The power of the press, like all powers, carries with it corresponding responsibilities. If it loads our minds with the significant facts of every day, and then teaches us what we are to think about them, how immeasurable is the necessity that the press shall be enlightened and high minded! We are told that the managing of a journal is a business, a trade. Let it be so; but the *editing* of a journal ought at least to deserve to be ranked as a learned profession. This vocation will more and more draw into it a large share of the best thinkers and writers from our colleges and universities. And no institution of learning can properly perform all its duties unless it provides for instruction that will engender the alertness of mind, the thoroughness of method, the comprehensiveness of vision, the minute accuracy of knowledge, and the wide acquaintance with the historical development of institutions which are indispensable to the largest and highest editorial success.

I come, I fear, at too late a moment for adequate presentation, to the third of the great branches of the subject I have undertaken to bring before you. Having presented what I consider to be the nature of the discipline all university students should acquire, whatever their purpose in life, and having described in outline the necessity of generous studies in those professions and vocations which have to do especially with men, I now come to that other group of studies which has to do primarily with material things. If, as President Eliot said in his inaugural address twenty-five years ago, the domain of a university is "all knowledge, and that of the best," the true university is a technical school, as well as a school of the humanities.

In a region which has to deal with new or undeveloped conditions, the activities of thought must ever be largely

devoted to material things. Forests and prairies must be subdued before we can look for the establishment and development of the more advanced industries.

The necessity of improved agriculture begins to reveal itself as soon as the first fruits of the virgin earth have been reaped. No soil, however fertile, can forever give, without taking something in return. As well expect a bank to honor our drafts for an indefinite future without receiving corresponding deposits. Even the soil of your own exuberant prairies begins to intimate that its patience is trifled with. The real Science of Agriculture had its origin in the demonstration of Liebig that by a return of the proper ingredients, a soil, however much is asked of it, may become increasingly productive, for an indefinite period. Under the inspiration of this great truth, the average crop per acre has been greatly increased during the past fifty years, in all the countries of western Europe. In the United States we have been languidly contenting ourselves with the belief that our soils were inexhaustible, and we have hardly yet waked up to the portentous fact that every ten years the census shows us that the average crop per acre is less than it was ten years before. We must be deaf as adders if we do not soon hear the trumpet call of agriculture for all that science can bring.

This need, moreover, is greatly emphasized by the marvelous improvements that have recently been made in transportation. The Bessemer steel rail and the telegraph have brought the farmers on the frontiers everywhere into all the marts of civilization. The competition in agriculture is getting to be like the competition in the great manufacturing centers of the world. Before it stands the Genius of Success, beckoning it on with the warning assurance that large rewards are for those, and for those only, who are possessed with keen and comprehensive intelligence. On the other side of his banner seems to be inscribed the Horatian phrase, *Scabies*

*extremum occupet*, which I once heard translated "the Devil take the hindermost."

The government of the United States has not been negligent of these momentous interests. The two Morrill bills and the Hatch bill have given to all the states the means of at least beginning a great work. The states must generously supplement these grants, if the great interests of Agriculture in all their multitudinous varieties are to be adequately cared for. The schools will do what they can, but the measure of their success will be determined very largely by the means that are placed at their disposal. Here, as elsewhere, success will not be ideal without large expenditures.

Success in all industrial ways depends upon the nice adjustment of means to ends; and I suppose the science which most perfectly accomplishes this result is that of engineering. Into this science, in its several branches, has gone much of the most ingenious and inventive thought of the past half century. The men of affairs tell us that the margin between profit and loss is often so small that the balance is turned this way or that by a very trifling difference between one machine and another. The other day I was looking over the characteristics of a very carefully designed steam heating plant, when the designer told me that the mechanical stoker is the result of fifty years of evolution, at the hands of the best mechanical engineers of the time. The great problem now is to convert as large a proportion of the fuel as possible into power; and so long as it remains true, as I am told it is at present, that only about five per cent. of the heat of the coal burned in a locomotive is devoted to doing its work, it is easy to see that much remains to be done in kinematics, as well as in thermodynamics, and in the designing of machines.

In electricity the field is probably even wider, and the possibilities greater. So many miracles have recently been wrought, that we now refuse to be astonished at anything. The Prince of the Power of the Air has disclosed his secret;

but so far he has refused to be made our docile and humble servant. As yet he is a protesting and rebellious slave, ever on the watch to strike down his master. Nor will he work without extorting too high a price for his labor. As Edison built up his successes on the solid basis of the scientific discoveries of his predecessors, so on the accumulated knowledge of past and present, it must be the work of our physicists and engineers to extend the boundaries of supreme dominion. This tricky Ariel, ever waiting for a controlling Prospero, must not only be reduced to sweet reasonableness, but must be taught to perform easily and economically every form of beneficent service.

For the Civil Engineer the problems are many and important. Hydraulic engineering, with the help of electricity, seems likely yet to convert the waterfalls, even in the far-off mountains, into docile agencies of material progress and comfort. The Ancients knew the value of irrigation. A conquering army cut the dikes, and the fertile and prosperous valleys of the Tigris and Euphrates became a deserted region,

"Where hawks, sea owls, and long tongued bitterns breed."

Modern science is reversing this process. As in Egypt the planting of trees has restored rain after a drought of three thousand years, so the judicious husbandry of irrigation may convert many of our desert plains into fruitful gardens. Along the feet of the Rocky Mountains and the Sierras, thousands of square miles of arid territory now remind the traveller of the waste over which Browning's "*Childe Roland to the Dark Tower came.*"

"As for the grass, it grows as scarce as hair  
In leprosy— \* \* \*  
"Now patches where some leanness of the soil's  
"Breaks into moss or substances like boils;  
"Then comes a palsied oak, a cleft in him  
"Like a distorted mouth that splits its rim,  
"Gaping at death, and dies while it recoils."

This grewsome desert may yet be converted into one vast garden, whose wealth of grains and fruits will be enough for the sustenance of mighty states.

Nor is the engineer obliged to go beyond the borders of civilization to find full scope for his powers. In every town and city the problems of drainage and a salutary water supply are of the first importance. Since we have discovered that the hiding place of death is in the water pipes, we know that eternal vigilance is the price of safety. I suppose it is still true that Rome was more scientifically and abundantly supplied with wholesome water than is any modern city. The elaborate treatise *De Aquaeductibus*, on the water supply of Rome, by one of the greatest of hydraulic engineers, Sextus Julius Frontinus, is one of the remarkable monuments of Roman greatness. The engineering works of France, of Germany, and of Great Britain give us most suggestive lessons how to combine the elements of utility with the elements of beauty.

Architecture is engineering adorned. The sense of beauty is as fundamental in human nature as the sense of utility. Who that has looked upon the Cathedral at Rheims, or the new spire at Ulm, or the Court of Honor at Chicago, has failed to be lifted up into an emotion of admiration and enthusiasm that is reserved for those lofty moments when we contemplate the greatest objects of Nature and Art? Surely architecture is not only one of the finest of the fine arts, but it is also the most elaborate and the most difficult. Unlike music, and sculpture, and painting, where the object of the artist is attained if the senses are duly gratified, architecture must always adapt itself strictly to the requirements of utility. The great saying of Violet-le-Duc, that, "You may have ornamented construction but never constructed ornament," is the very happy expression of a requirement that architecture and engineering go hand in hand. None can look upon the columns and the flying arches of a mediæval cathedral, long ago touched by the finger of genius, or upon that most stu-

pendous and magnificent of railway stations at Frankfort-on-the-Main, or upon the modern steel and stone structures in New York or Chicago, without feeling that, after all, that appropriate architectural beauty which captivates us is only the consummation and crown of a long process of difficult and complicated adjustments extending from the footings to the finials. Hence it is that architecture and engineering are inseparable. A shoddy father once said to a university president concerning his son, who had been unfortunate in his examinations, "Why, if my son, as you say, has no capacity, I will buy him one." An architect must either have the capacity of an engineer or he must buy one.

These ever growing necessities in literature, in science, and in the arts, impose upon every appreciative people very large obligations. When, in 1871, the victorious Germans came back from Paris laden with gold, they dedicated an immense sum to the erection and equipment of a temple of education at Berlin, and within ten years three thousand students had come together for advanced studies in the polytechnic arts. Upon the new territory of Alsace-Lorraine they planted the University of Strassburg, and after giving it magnificent shelter and equipping its various departments with affluent generosity, they collected within ten years a library of 400,000 volumes. The little republic of Switzerland, with no city of 75,000 inhabitants, and with less than 3,000,000 all told, but ever awake to a sense of the greatest good, erected a few years ago, for the Polytechnic school of Zurich, a chemical laboratory at a cost of 2,225,000 francs, and enjoyed the privileges afforded by the new building so much that they straightway followed it with a physical laboratory at a cost of three and a quarter millions. In the United States we build magnificent temples of learning to the three R's; but the necessities of equipment for the higher education are only just beginning to be felt. But a new era is dawning upon us, and though the light is not yet far advanced, it is

cheering to remember that the dawn always heralds the full light of day.

The appliances absolutely necessary to complete efficiency in a modern university are multitudinous in variety and vast in quantity. The genius of a modern university is investigation. The saying of John Henry Newman that a university is not the place for investigation, was never comprehensively true. It is not at all true at the present day. The most stupendous of all the discoveries of science, the law of gravitation, was the work of a Cambridge professor, and untold numbers of modern discoveries of importance have owed their origin to investigations carried on in the professor's laboratory. To mention the names of Liebig, and Kirchoff, and Helmholtz, and Huxley, and Henry, is enough to show something of the debt of science to the spirit of university investigation. The student learns not so much by being told, as by finding out for himself, under proper guidance and with proper opportunities. Every department in literature, in history, in economics, and in science, therefore, must have its laboratories, its seminary rooms and its other facilities for research. For the applied sciences especially the material equipment must be multiform and costly. The engineers cannot pretend to be equipped without opportunities for studying from models every type of engine, every kind of dynamo, and every form of boiler. The civil engineer must have models of bridges and dams and aqueducts, besides drawings and photographs without number. The architect must have models of every variety of the arch and the vault, and drawings and photographs not only of all the monumental buildings of the world, but of the thousand interesting details by which their real character is revealed. Most important of all, the modern student must have access to libraries which will enable him to trace down to the present month the history of all the knowledge of the world on the subject in hand. This means not only vast collections of books, and large annual expenditures for period-



icals and other current issues of importance, but a large administrative force to make all the resources of the library speedily available to the searcher after truth.

The modern university that fulfills the requirements of the time cannot be inexpensive. Indeed, you may say of it, as a recent great designer said to his client, "This may be either cheap or good; I cannot promise that it will be both cheap and good; if it is cheap, it will not be good; and if it is good, it will not be cheap." Socrates in the *Memorabilia* quotes Epicharmus as saying: "The gods give nothing; but they sell all good things at a high price."

Brethren of Illinois, it is for you, the people of this great Empire State of the Mississippi Valley, to determine whether you will make your University cheap, or whether you will make it good. You cannot do both. You have a great opportunity, and every friend of the higher education must hope that you will see the occasion, and embrace it with that fervor of enthusiasm which has ever been so characteristic of the state of Illinois. Then you will be able truthfully and joyfully to say that you have provided for "that complete and generous education," which, according to the great scholar and poet of the English Revolution, "fits a man to perform fully, skillfully, and magnanimously all the offices both public and private, of peace and war."

The University Glee Club sang "Down by the Riverside."

PRESIDENT DRAPER:—We have still another pleasure before us. We have with us a gentleman whose engineering accomplishments are well known to the country. He has shown his great interest in our work many times, and he has been of assistance to our graduates on numerous occasions. It was a generous act for him to come and speak a word of encouragement and cheer to us to-night.

It is a great satisfaction to me to be able to present to you General William Sooy Smith, of Chicago.

## ADDRESS

BY

GENERAL WILLIAM SOOY SMITH,  
CIVIL ENGINEER, CHICAGO.

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*Ladies and Gentlemen, Officers, Students, and Friends of the  
University of Illinois:*

To me has been assigned the pleasant duty of bringing to you the greetings of the engineering profession on this interesting and auspicious occasion. Interesting and auspicious it most certainly is, because of the characteristics of the age in which we live, and the promise of great good to our country and race from the growth and development of the University of Illinois and its kindred institutions of learning throughout our land.

We meet to dedicate a noble temple to no "unknown God," but to the culture and service of the beneficent arts and sciences, to which not only the engineer and architect, but the mechanic also, must devote his best study and energies in order to realize the object of his calling, namely the utilization of the forces and materials of nature for the benefit of mankind. Neither history nor tradition, nor the ruins of the past bring to us the knowledge of any age that excelled or equaled our own in acquaintance with the principles which underlie engineering science, or in the skill exercised in applying them to useful purposes.

At the opening of the first great steel bridge ever built, the one across the Missouri river at Glasgow, Mo., the speaker said:

"It is to the present century that the world is indebted for the highest attainments of science and art in meeting the demands created by the wonderful progress of civilization, promoted by the application of steam to railway locomotion, for bridges that combine all the elements of safety, durability and rapidity of construction; and to our own land may the world turn for the highest exhibitions of learning and skill in this department of public works.

"Great bridges are not built by novices. There is no department that requires greater or more skilled brain work. We cease to look to the fascinations of poetry, the charms of eloquence, or the wisdom of the forum, for the exhibitions of the power of close and systematic thought. It is to great works of the present day like that which we celebrate, to which we turn as the practical, utilitarian monuments of true greatness. Poetry, eloquence, law, and government, are factors of civilization, but not its highest forms. The discovery and practical application of hidden forces to the real and actual demands of a ceaselessly progressive life, is a step far in advance of those original elements of improved society, yet all are necessary to the complete entirety."

Both our age and our country are peculiarly and pre-eminently utilitarian—whether or not this is best and noblest, it is the fact—and the University of Illinois stands in the front rank of those agencies which working together, promote the growth and multiplication of the improvements, inventions, and discoveries which now enlist so much of the attention of mankind, and contribute so largely to the comfort, conveniences, and necessities of civilized life.

While this is true of its whole work, it is especially so of that of the College of Engineering. For this college a home and a workshop have been provided by the munificence of the great State of Illinois, and we are met to open wide its doors and bid the officers and students of the University enter and take possession and inaugurate the broader, grander, and more

perfect work, which the increased facilities it will afford make practicable.

We join joyfully in thanks and gratitude to our great and noble state for this gift, promising our best efforts to make it useful in the highest degree, and hoping that it may continue for many generations to return to the state and the nation an abundant reward for the wisdom and liberality of the legislators and officers who granted the money expended in its construction.

How certain it is that great benefits will come from the instruction here given! This is a free institution, "of the People and for the People." The poorest boy, if he is but industrious and frugal, may enter here and work his own way through. I say this advisedly, for I did the like under circumstances far more difficult than those which exist here. And how many men have done the same and have come out stronger and better prepared for the duties of life for having done so.

The young men who enter here do so on the plane of absolute equality, with the best of facilities for getting a thorough education and correct habits of thought and action. And I know from actual trial of the graduates of the University of Illinois, that they are admirably prepared to enter the profession of civil engineers, with the best of chances for success in it. The very organization of the University is broad, liberal and comprehensive. Divided, as it is, into colleges, which again have their sub-divisions reaching and covering the special instruction and training best calculated to develop experts in special lines of work, it gives to its alumni the opportunity for each to follow the strong bent of his own talent and inclination to select the work which is in itself promising and most congenial to his own taste.

And here, let us remember that the field of engineering work is now so broad, and the knowledge required to make us familiar with it as a whole, so varied and almost unlimited

that no mind can grasp it in the short time of one human life. All that we can hope to do is to get, so far as we can, a general knowledge of engineering work, and a special and intimate acquaintance with that particular department of it to which we may determine to devote our best efforts. If we undertake too much we cannot hope to excel in any one kind of work, to which others, as able as we, give their best and constant efforts. And so, almost invariably, the engineer who spreads his study and efforts over the whole field becomes superficial, and an unsuccessful theorist. It may sometimes happen that a born genius may absorb, as if by intuition, a very wide range of engineering knowledge, and do good work of many different kinds. But the disposition and ability to do steady, faithful work, and to learn from it and from similar works of others all that they may teach, is about the best genius that kind Providence commonly gives to engineers. Poets may be born such, and if not, study and effort will hardly supply them the "divine afflatus." But one-half of the competent civil engineer is made up of common sense and common honesty, and the other half is hard study and hard work.

Engineering is both a science and an art, and henceforth the College of Engineering of this University will be able to give thorough preliminary training in the science, and fair introductory practice in many portions of the art.

You have your engineering societies, your laboratory, your workshop, your testing machines, and your instruments for field work. Use all these facilities for acquiring such practical skill as you can, during your stay at the University; and when you go forth from it, keep up your mathematics and your familiarity with its applications to physics; and when you undertake works don't be afraid of soiling your hands or your clothes, but get in close touch with your work. Let no contractor, foreman, or laborer be your superior in ability to select the right methods and appliances for doing it.

Make yourselves familiar with materials used in construction, and with the right uses of them. Learn to distinguish between a good workman and a bad workman, between good work and bad work.

Keep careful notes of the time and money required to do each description of work, and be a competent business man, as well as a good engineer.

I have not been able to refrain from these words of advice to the students, into whose young, hopeful faces I am looking to-night over the broad chasm of fifty years of hard study and work. And really, it cannot be irrelevant on this occasion, when we are met to dedicate the Engineering Hall, in which students are to commence their careers of usefulness, which I humbly believe should be shaped and guided to some extent by the above suggestions.

It does not belong to me to make suggestions to the able and eminent teachers of this great University. I hope and believe that from the standpoint of your experience you will heartily approve the advice I have ventured to give as the lessons learned from mine. Yours is a great and sacred duty. To you our state and nation entrusts the instruction of large numbers of young ladies and young gentlemen, providing you with facilities for such instruction, which up to a very recent date were unknown. By such able and earnest work as you surely do, or your graduates would not be what I know they are, you are to enable and compel them to lay deep and strong the foundations of that learning and experience which is to make them useful and successful men and women. And if at the same time you can give them good habits, noble aims, and a high sense of honor, the charm of exalted character will be added to that of deep learning and great achievement.

How bright our present anticipations should be for yourselves and for the University and its graduates. The influence of the instruction and training here given is already felt



throughout the state, and to some extent throughout the nation. Our engineering and our husbandry are better, and each graduate is a better and more useful citizen for the training he has here received; his intelligence has been increased, and his patriotism has been quickened by gratitude for his instruction.

There is a class of benefits derived by the state and nation from the establishment and maintenance of these Universities which are apt to pass without notice. We cannot overestimate the value of the discoveries, inventions, and improvements which may be made by those who graduate here, which would never be made if the education here given was not acquired. Who would attempt to calculate in dollars and cents the value of the improvements made by engineers and metallurgists in the manufacture of steel, adapting it to use of bridge building and railroad uses!

The span of bridges has been increased from about 250 feet thirty years ago, to over 1,600 at present, and the lifetime of a railroad rail has been multiplied at least threefold.

Steel is now made at less actual cost than wrought iron, and it has for most purposes about double its value.

How much are the inventions of Edison and such as he worth to our nation and to the world? You do not directly make such inventions at the University, but you cultivate and train and develop the brains that do make them, and this is much better.

Have you ever seen the market value of a well disciplined mind quoted? No, nor will you, for it cannot be estimated.

The house we dedicate is to be devoted to the education of brain and hand. The gross materials of which it is composed have perhaps nothing of a sacred character, but consecrated and noble, and almost holy are the purposes which it is to serve. And as we love our country, and look forward to the bright future that we pray for, for it, and for our children and children's children to the latest generations under its benign

government, we return thanks to Almighty God for this great University and for this last addition to its capacity for usefulness.

The University of Illinois is already beloved and appreciated by our people, and brighter and brighter will be its fame as the years roll on, and the number of its students and graduates increases and multiplies, as it will, a hundredfold.

Teachers and students, be earnest and enthusiastic in your work. Gain and impart all the sound knowledge you can acquire, and in a modest way let the world know what you do.

Students, if you cannot find room in the professions of engineering or architecture, overcrowded as they both are by the great number of graduates that are now turned out of the polytechnic institutes and the departments of engineering and architecture in our various universities and colleges, go into manufacturing and other departments, cognate with these professions, and you will find abundant opportunities to utilize and make valuable to yourselves and others all that you have learned here.

I cannot better conclude my effort to make apparent the value of the building we dedicate to the acquirement of knowledge than by repeating Dr. Knott's tribute to knowledge itself.

“Knowledge is power. It is ecstatic in enjoyment, perennial in fame, unlimited in space, and infinite in duration. It scales the mountains, looks into the volcano, dives into the ocean, perforates the earth, encircles the globe, and wings its flight to the skies. No place is too remote for its grasp, and no heavens too exalted for its touch.”

PRESIDENT DRAPER:—We are now about to conclude an eventful day in the history of the University. I am sure we shall remember it long and pleasantly. Let us conclude it in good order and follow it with good cheer. I will ask the audience to remain seated while the University Orchestra favors us



with a selection. In the meantime you will excuse Governor Altgeld, the members of the board of trustees and of the faculty, and prominent guests, as we repair to Engineering Hall and make ready to receive you all there. At the conclusion of the music, Rev. Dr. Wilder will kindly pronounce the benediction, and then you are invited to inspect the new building, and while doing so we shall be glad to take each and all by the hand.

Music by the University Orchestra. Overture (*Theo. Mozas*).

BENEDICTION BY REV. CHARLES N. WILDER, D.D.

May the peace of God, which passeth all understanding, fill your hearts and minds and keep you in the love of God continually, through Jesus Christ. *Amen.*

